



**US Army Corps
of Engineers®**

PUBLIC NOTICE

Portland District
Operations Division
PO Box 2946
Portland, OR 97208-2946

PUBLIC NOTICE DATE: January 21, 2005

CLOSING DATE: February 22, 2005

REFERENCE NUMBER: NWPOP-CLA-F05-001
**Maintenance Dredging of Columbia River and Side
Channels (RM 3 to 192)**

Interested parties are hereby notified that the U.S. Army Corps of Engineers, Portland District, plans to perform work in navigable waters of this District under the Provisions of Section 404 of the Clean Water Act of 1977 and in accordance with Regulation 33 CFR parts 335-338.

Comments: Comments on the described work, **noting the reference number**, should reach the U.S. Army Corps of Engineers, no later than the expiration date of this Public Notice to become part of the record and to be considered in the decision. Comments should be mailed to the following address:

U.S. Army Corps of Engineers, Portland District
ATTN: CENWP-OP-NW
P.O. Box 2946
Portland, Oregon 97208-2946

Purpose: To maintain the project channels at their federally authorized depths by periodically removing restricting shoals consisting of naturally occurring sedimentary material. For this action, up to five (5) feet of advance depth maintenance dredging will be accomplished in the 40-foot federal navigation channel; up to two (2) feet of advance maintenance dredging will be accomplished in all other channels. At selected high volume shoal areas in the 40-foot channel, up to 100 feet of advance width maintenance dredging may occur. Specific disposal options that will be pursued during the coming 5 years will be as described below.

Location: This proposed work is the maintenance of Columbia River main ship channel, from River Mile (RM) 3 through 106.5 (including the downstream entrance to Oregon Slough), the barge channel from RM 106.5 through 192, and various side channels along the Columbia River. The channel passes through Clatsop, Columbia, Multnomah, Hood River and Wasco Counties in Oregon, and

Pacific, Wahkiakum, Cowlitz, Clark, Skamania and Klickitat Counties in Washington. See attached maps.

Work: The proposed work involves the redistribution of sedimentary material from the Columbia and Lower Willamette Federal project channel (including the 40-foot access channel to the lower end of Oregon Slough), the Vancouver to The Dalles Federal project channel, and the following side channel projects: Baker Bay West Channel, Chinook Channel, Hammond Boat Basin, Skipanon Channel, Skamokawa Creek Channel, Wahkiakum Ferry/Westport Slough Channel, Old Mouth Cowlitz River and the upstream entrance channel to Oregon Slough. The dimensions of each authorized channel are as follows:

<u>CHANNEL</u>	<u>DEPTH and WIDTH</u>	<u>LENGTH</u>
Columbia & Lower Willamette (OR/WA)	40 feet x 600 feet	RM 3 to 106.5
Vancouver to The Dalles (OR/WA)	17 feet x 300 feet	RM 106.5 to 192
Baker Bay West Channel (WA)	16 feet x 200 feet	for 2,000 feet
	16 feet x 150 feet	from 2,000 feet to RM 3.2
Chinook Channel (WA)	10 feet x 150 feet	2 miles long
Hammond Boat Basin (OR)	10 feet x 100 feet	1,300 feet long
Skipanon Channel (OR)	16 feet x 300 feet	1.8 miles long
Skamokawa Creek (WA)	6.5 feet x 75 feet	1,600 feet long
Wahkiakum Ferry/ (WA/OR)	9 feet x 200 feet	1,900 feet long
Westport Slough	9 feet x 200 feet	through shoal
Old Mouth Cowlitz River (WA)	8 feet x 150 feet	3,800 feet long
Oregon Slough (upstream end) (OR)	10 feet x 300 feet	5,800 feet long

The majority of the channel in the lower Columbia River is naturally greater than 40 feet. Historically, in an average year, about 30 to 35 miles of the channel require dredging. Where it is dredged, an overdepth of between 2 and 5 feet is achieved to ensure that the 40 foot depth is maintained between dredging operations. The channel authorization allows for up to 5 feet of overdepth dredging for this purpose. Shoals forming in the channel vary from year to year, but generally form first on the channel edges and build toward the middle of the channel. Typical work areas are shown on the attached drawings. Approximately 4-6 million cubic yards per year will be removed by pipeline dredge, clamshell dredge, or hopper dredging. The work may occur year round to prevent hazardous conditions from developing, but normally occurs between March 1 and November 30.

The Vancouver to The Dalles channel is authorized to 27 feet of depth, but current users do not require that much depth. The Corps maintains the navigation channel at a depth of 17 feet. Approximately 85,000 to 100, 000 cubic yards of material will be removed from the project channel by hopper or clamshell dredging. Almost all of the dredging is done between RM 110 and 125. Occasionally, the entrance channels to the locks at the dams need to be dredged. Work in this reach is conducted from November 1 through February 28 up to Bonneville Dam, and from November 15 through March 15 upstream of Bonneville Dam.

The following are the average quantities and dredging frequencies for the Columbia River side channels:

<u>CHANNEL</u>	<u>QUANTITY</u>	<u>FREQUENCY</u>
Baker Bay West Channel	40-50,000 cubic yards	Every 3 to 4 years
Chinook Channel	150-200,000 cubic yards	Every 1 to 2 years
Hammond Boat Basin	15-20,000 cubic yards	Infrequently (last time 1990)
Skipanon Channel	20-50,000 cubic yards	Every 1 to 3 years
Skamokawa Creek	15-20,000 cubic yards	Infrequently (last time 1993)
Wahkiakum Ferry/ Westport Slough	15-25,000 cubic yards	Every 2 to 3 years
Old Mouth Cowlitz River	10-20,000 cubic yards	Annually (typically)
Oregon Slough (upstream end)	50,000 cubic yards	Every 3 to 5 years

These projects are maintained primarily by clamshell dredging with inwater/flowlane disposal. The Skipanon Channel entrance is also maintained by hopper dredge.

<u>CHANNEL</u>	<u>ENVIRONMENTAL WORK WINDOW</u>
Baker Bay West Channel	July 15 through February 28
Chinook Channel	July 15 through February 28
Hammond Boat Basin	November 1 through February 28
Skipanon Channel	July 15 through February 28
Skamokawa Creek	November 1 through February 28
Wahkiakum Ferry/ Westport Slough	November 1 through February 28
Old Mouth Cowlitz River	November 1 through February 28, July 15 through August 15
Oregon Slough (upstream end)	November 1 through February 28

Rehandle Work: Occasionally, hopper dredges will place material in the flowlane in conjunction with a pipeline dredging operation. This material is then rehandled by the pipeline dredge to either an upland or beach nourishment site. This type of operation was used in 2004 on Miller Sands Spit to provide additional material for replenishing the shoreline to protect the lagoon inside the spit. It has also been used along the Columbia River to provide sand to sites that sell it for commercial use, which benefits the states through the collection of royalty fees. Rehandle operations can further reduce shoaling in some reaches of the river by removing material from the system. It is generally employed when a hopper dredge is working within close range of a pipeline dredge.

Sediment Quality: The potential for unacceptable adverse effects from the disposal of dredged material from Columbia River federal navigation projects is evaluated in accordance with both national and regional guidance. National guidance is provided by the following EPA/Corps guidance manuals: (1) "Evaluating the Environmental Effects of Dredged Material Management Alternatives – A Technical Framework" (EPA 842-B-92-008); (2) the "Evaluation of Dredged Material Proposed for Ocean Disposal, Testing Manual" (EPA 503/8-91/001); and (3) "Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Inland Testing Manual" (EPA 823-B-98-004). Regional guidance is provided by the "Dredged Material Evaluation Framework, Lower Columbia River Management Area," November 1998 (DMEF). The DMEF was developed cooperatively by the

U.S. Army Corps of Engineers (Corps); Region 10, U.S. Environmental Protection Agency (EPA); Washington Department of Ecology (Ecology); Washington Department of Natural Resources (DNR); and Oregon Department of Environmental Quality (DEQ) as principal agencies. The Regional Sediment Evaluation Team is currently updating the DMEF to include new data, which will contain freshwater criteria for sediments.

Evaluation procedures consist of the sampling requirements, tests, protocols and guidelines for test interpretation (i.e., disposal guidelines) that are to be used in assessing the quality of dredged material and its acceptability for unconfined aquatic disposal. The procedures identify whether unacceptable adverse effects on biological resources, including bioaccumulation, and/or human health might result from dredged material disposal. The evaluation procedures are environmentally conservative, and therefore protective, as required by the Clean Water Act and the Marine Protection Research and Sanctuaries Act.

For complete sediment evaluation reports of these projects, please visit the following website:
<http://www.nwp.usace.army.mil/ec/h/hr/sqer.htm>

Based on the sediment evaluations, sediments from the 40-foot Columbia River Federal navigation channel, the Vancouver to The Dalles navigation channel, and the various side channels listed in this public notice have been determined to be suitable for unconfined aquatic disposal.

Placement of Dredged Material: The areas proposed for subsequent placement of the material are shown on the attached maps. These sites have been used in the past. Reviewers seeking detailed information on specific sites are encouraged to contact the Portland District Corps of Engineers, Waterways Maintenance Section, at (503) 808-4341. Inclusion of detailed drawings of each site in this notice is not practical due to the size of the project, the practical scale of the maps, and the number of proposed sites.

Beach Nourishment Disposal: Beach nourishment may occur at the following sites: O-23.5 (Miller Sands Spit), W-33.4 (Skamokawa Vista Park), and O-86.2 (Sand Island at St. Helens). These sites have been evaluated for benthic productivity and approved by the National Oceanic and Atmospheric Administration (NOAA) Fisheries.

Flowlane (in-water) Disposal: Most in-water disposal occurs in the flowlane (within or adjacent to the channel) by hopper, pipeline, and clamshell dredges. The average annual quantity of material disposed in the flowlane is 4.2 million cubic yards. This type of dredged material disposal is done throughout the Columbia River navigation channel where depths range from 35 to 65 feet, but are typically below 45 feet. Disposal in depths over 65 feet may occur in the future, but this action will be coordinated with State and Federal resource agencies for compliance prior to implementing such an action. These are not designated sites, but rather vary depending on the condition of the channel each year. As flowlane areas fill, new deep areas are formed elsewhere as a result of natural river processes.

Hopper dredges collect dredged material in the “hopper” of the vessel until it is near capacity. When filled, the vessel moves to a flowlane site. As the dredge is moving, the

hopper doors open and the material is discharged at varying rates depending upon how far the hopper doors are opened. Some hopper dredges are "split hull" type, which instead of a series of doors opening to discharge material as described above, the entire hull is opened to discharge. The rate of material discharge can be varied by how far the hull is split open.

Flowlane discharge from pipeline dredges differs from hoppers in that material is continuously discharged during dredging operations. Placement of material at flowlane sites is done using a down pipe with a diffuser plate at the end. This down pipe extends 20 feet below the water surface to avoid impacts to migrating juvenile salmonids. During placement of dredged material, the down pipe will continually be moved so that mounding on the bottom does not occur.

Related Work

Work by Others - Other individuals/corporations may mine the main channel under this maintenance public notice at the discretion of the Corps of Engineers, Portland District. Mining of Federal channels to the maintenance depths is a beneficial use of dredged material. Those mining in the channel will be subject to the same conditions and restrictions for channel dimensions, overdepth allowances, safety considerations, and environmental concerns as the Corps' dredges and contractors. Persons wishing to dredge under a maintenance permit must first contact the Corps of Engineers at the address listed on the front page of this notice. After meeting the requirements of the Corps, the Oregon Department of State Lands, and the Washington Department of Natural Resources for the mining, the requestor will be issued a limited duration license for specified river reaches. Stockpiling and sale of the material are subject to the leasing and royalty requirements of the Oregon Department of State Lands and/or the Washington Department of Natural Resources and may be subject to other Federal requirements. It is the requestor's responsibility to meet all other requirements.

Other Navigation Projects - The entrance channel at the Mouth of the Columbia River (MCR) extends from RM -3 to RM 3 on the Columbia River. Maintenance of the MCR project is under a separate congressional authority. Materials dredged from the mouth to maintain the channel are taken offshore for disposal. Maintenance of the Mouth of the Columbia River has been handled under a separate coordination action. The Lower Willamette River to RM 11.6 is an authorized portion of the 40-foot channel (the subject of this notice). The dredging conditions, environmental issues and dredging frequency are significantly different for the Lower Willamette River. It is therefore coordinated separately.

Proposed Channel Deepening - The Corps' Chief of Engineers' Report on the Columbia River Channel Improvement Project, including the final recommendation to Congress, was issued in December 1999. A Record of Decision (ROD) was signed in January of 2004. Construction is scheduled to begin in early 2005. However, the proposed deepening project is separate from the work proposed in this public notice. This public notice only covers continued maintenance of the federally authorized 40-foot navigation channel.

Project Sponsors: The local sponsors for the Columbia and Lower Willamette River project in Oregon are the Ports of Portland, St. Helens, and Astoria. In Washington they are the Ports of Longview, Kalama, Woodland and Vancouver, Wahkiakum County and the Washington Department of Natural Resources. Local sponsors for this project are responsible for obtaining federally required lands, easements and rights-of-way for disposal areas and for diking of upland sites, when necessary.

Clean Water Act Compliance: A Section 404 (b) Evaluation was prepared to address the proposed discharge of dredged material into waters of the United States and is attached to this public notice. State Water Quality certification will also be obtained from Oregon Department of Environmental Quality (ODEQ) and Washington Department of Ecology (Ecology) as required under Section 401 of the Act. The 401 certifications from Oregon and Washington will review and evaluate the proposed project and provide conditions to ensure that state water quality standards are addressed or complied with. The above requirement shall not be construed as affecting or impairing the authority of the Secretary of the Army to maintain navigation.

Cultural Resources: An investigation has been conducted and it was determined that no cultural resources would be affected by the proposed work. This investigation included a thorough literature search, a review of the latest published version of the National Register of Historic Places and consultation with the State Historic Preservation Officer. A shipwreck inventory was part of the investigation. Should future reviews indicate evidence of significant archaeological or historic resources, additional appropriate action will be taken.

Federal Consistency Requirements with State's Coastal Zone Management Program: The proposed project is the maintenance of an existing navigation channel and placement of dredged material at an existing relocation sites. Operations will be conducted in a manner that is consistent, to the maximum extent practicable, with the approved state management program. A determination of the project's consistency with the applicable State Coastal Zone Management program has been coordinated with the States of Washington and Oregon in accordance with the Coastal Zone Management Act of 1972.

Endangered Species: The Corps has consulted with both the US Fish and Wildlife Service (USFWS) and NOAA Fisheries (NOAA) regarding potential impacts of the proposed work to threatened and endangered species. In a letter dated Dec. 14, 2004, the USFWS concurred with the Corps conclusion provided in a Biological Assessment (BA) dated Nov. 8, 2004, that the proposed project is not likely to adversely affect listed species under their jurisdiction. The Corps also provided a BA to NOAA, in September 2004, that concluded that the proposed action is likely to adversely affect the listed species under their jurisdiction. NOAA is preparing a Biological Opinion on the project that is due in February 2005.

Environmental Coordination: The proposed work will be coordinated with the following Federal, State, or local agencies:

Federal

US Environmental Protection Agency
US Fish and Wildlife Service
NOAA Fisheries

State of Washington

Washington Department of Fisheries and Wildlife
Washington State Department of Ecology
Washington State Department of Natural Resources
Washington State Historic Preservation Office

State of Oregon

Oregon Department of Fish and Wildlife
Oregon Division of State Lands
Oregon Department of Environmental Quality
Oregon Department of Land Conservation and Development
Oregon State Historic Preservation Office

Statement of Policy for Operations and Maintenance Dredging: The Corps of Engineers undertakes operations and maintenance activities where appropriate and environmentally acceptable. All practicable and reasonable alternatives are fully considered on an equal basis. This includes the discharge of dredged or fill materials into waters of the US or ocean waters in the least costly manner, at the least costly and most practicable location, and consistent with engineering and environmental requirements (33 CFR Part 335.4). The least costly alternative, consistent with sound engineering practices and selected through the 404(b)(1) guidelines or ocean disposal criteria, will be designated the Federal standard for the proposed project (33 CFR Part 336.1(c)(1)). Public Notices for Corps operations and maintenance activities are normally issued for an indefinite period of time and are not reissued unless changes in the disposal plan warrant re-evaluation under Section 404 of the Clean Water Act or Section 103 of the Marine Protection Research and Sanctuaries Act of 1972 (33 CFR Part 337.1 (a)). Resource agencies listed in the COORDINATION paragraph will be informed each year of specific project requirements.

Public Interest Review: The decision whether to perform the work will be based on an evaluation of the probable impact of the described activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit that reasonably may be expected to accrue from the proposal must be balanced against its reasonably

foreseeable detriments. All factors which may be relevant to the proposal will be considered; among these are conservation, economics, aesthetics, general environmental concerns, historic values, fish and wildlife values, flood damage prevention, land use, navigation, recreation, water supply, water quality, energy needs, safety, food production, and, in general, the needs and welfare of the people.

Public Hearing: Any person who has an interest that may be affected by the disposal of this dredged material may request a public hearing. The request must be submitted in writing to the District Engineer within 30 days of the date of this notice and must clearly set forth the interest which may be affected and the manner in which the interest may be affected by this activity.

EIS Determination: An Environmental Impact Statement and a Supplemental Environmental Impact Statement have been prepared for the work described by this Public Notice. Copies of these documents are on file at the Portland District Office Library, 333 SW First Avenue, Portland, Oregon, for review.

Additional Information: Additional information may be obtained from Jon Gornick, Channels and Harbors Project, Waterways Maintenance Section, at the above address, telephone 503/808-4341, email: jon.m.gornick@nwp01.usace.army.mil.

Comments on the described work, with the reference number, should reach this office no later than the closing date of this Public Notice to become part of the record and be considered in the decision.



Sheryl A. Carrubba, P.E.
Operations Manager
Channels and Harbors Project



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

*P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006*

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Notice of Application for
Water Quality Certification

Date: January 21, 2005

Notice is hereby given that a request has been filed with the Department of Ecology, pursuant to the requirements of Section 401 of the federal Clean Water Act of 1977 (PL 95-217), to certify that the project described in the U.S. Army Corps of Engineers Public Notice No. NWPOP-CLA-FO5-001 will comply with the Sections 301, 302, 303, 306, and 307 of the Act, and with applicable provisions of State and Federal water pollution control laws.

Notice is hereby given that a request has been filed with the Department of Ecology, pursuant to the requirements of Section 307© of the Federal Coastal Zone Management Act of 1972 (16 U.S.C. 1451), to certify that the above referenced project will comply with the Washington State Coastal Zone Management Program and that the project will be conducted in a manner consistent with that program.

Any person desiring to present views on the project pertaining to the project on either or both (1) compliance with water pollution control laws or (2) the project's compliance or consistency with the Washington State Coastal Zone Management Program may do so by providing written comments within 30 days of the above publication date to:

Federal Permit Coordinator
Department of Ecology
SEA Program
Post Office Box 47600
Olympia, Washington 98504-7600

PUBLIC NOTICE

Oregon Department of Environmental Quality

Water Quality 401 Certification

Corps of Engineers Action ID Number: NWPOP-CLA-F05-001
Oregon Division of State Lands Number:

Notice Issued: January 21, 2005
Written Comments Due: February 22, 2005

WHO IS THE APPLICANT: U.S. Army Corps of Engineers

LOCATION OF CERTIFICATION ACTIVITY: See attached U.S. Army Corps of Engineers public notice

WHAT IS PROPOSED: See attached U.S. Army Corps of Engineers public notice on the proposed project

NEED FOR CERTIFICATION: Section 401 of the Federal Clean Water Act requires applicants for Federal permits or licenses to provide the Federal agency a water quality certification from the State of Oregon if the proposed activity may result in a discharge to surface waters.

DESCRIPTION OF DISCHARGES: See attached U.S. Army Corps of Engineers public notice on the proposed project

WHERE TO FIND DOCUMENTS: Documents and related material are available for examination and copying at Oregon Department of Environmental Quality, Water Quality Division, 811 S.W. 6th Avenue, Portland, Oregon 97204

While not required, scheduling an appointment will ensure documents are readily accessible during your visit. To schedule an appointment please call Alice Kavajecz at (503) 229-6962.

Questions regarding the proposed certification may be faxed to (503) 229-5408, or phoned to the 401 Program Coordinator at (503) 229-5845, or (503) 228-5046.

PUBLIC PARTICIPATION:

Public Hearing: Oregon Administrative Rule (OAR) 340-48-0020 (6) states that "The Director shall provide an opportunity for the applicant, any affected state, or any interested agency, person, or group of persons to request or petition for a public hearing with respect to certification applications. If the Director determines that new information may be produced thereby, a public hearing will be held prior to the Director's final determination. Instances of doubt shall be resolved in favor of holding the hearing. There shall be public notice of such a hearing."

Written comments:

Written comments on the proposed certification must be received at the Oregon Department of Environmental Quality by 5 p.m. on (full date). Written comments should be mailed to Oregon Department of Environmental Quality, Attn: 401 Program

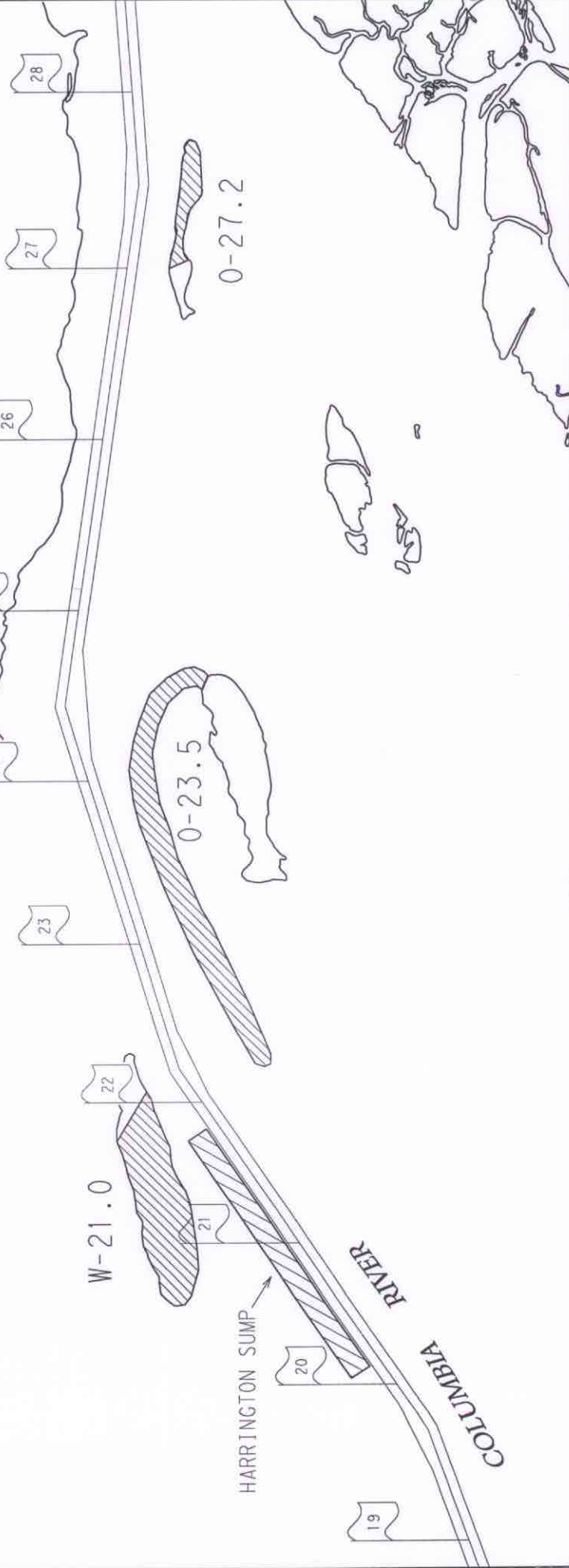
Coordinator, 811 S.W. 6th Avenue, Portland, Oregon 97204. ***People wishing to send written comments via e-mail should be aware that if there is a delay between servers or if a server is not functioning properly, e-mails may not be received prior to the close of the public comment period.*** People wishing to send comments via e-mail should send them in Microsoft Word (through version 7.0), WordPerfect (through version 6.x) or plain text format to *401publiccomments@deq.state.or.us*. Otherwise, due to conversion difficulties, DEQ recommends that comments be sent in hard copy.

WHAT HAPPENS NEXT: DEQ will review and consider all comments received during the public comment period. Following this review, the permit may be issued as proposed, modified, or denied. You will be notified of DEQ's final decision if you present either oral or written comments during the comment period. Otherwise, if you wish to receive notification, please call or write DEQ at the above address.

ACCESSIBILITY INFORMATION: This publication is available in alternate format (e.g. large print, Braille) upon request. Please contact DEQ Office of Communications and Outreach at (503) 229-5317 or toll free within Oregon at 1-800-452-4011 to request an alternate format. People with a hearing impairment can receive help by calling DEQ's TTY at (503) 229-6993.

WASHINGTON

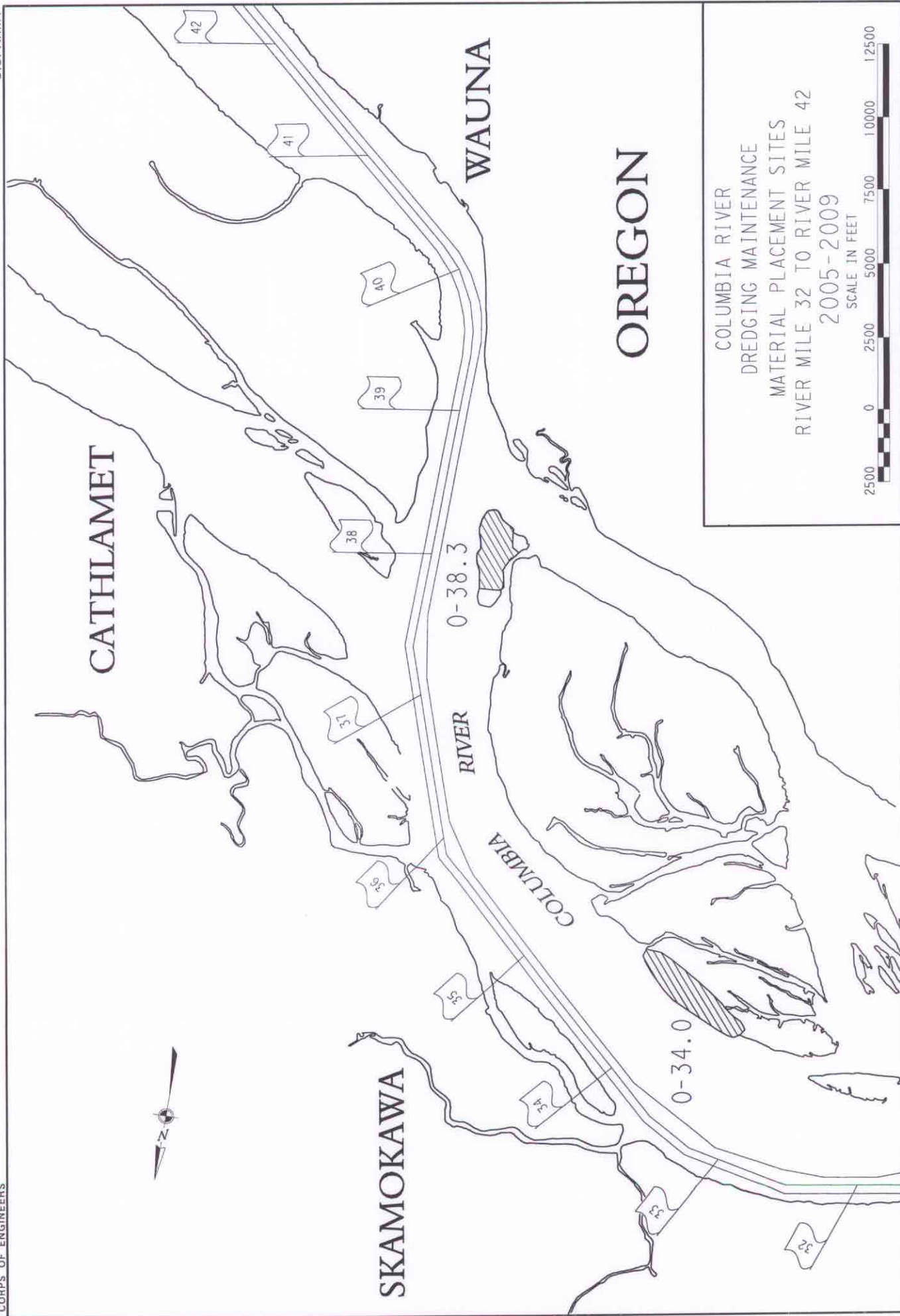
BROOKFIELD



COLUMBIA RIVER
DREDGING MAINTENANCE
MATERIAL PLACEMENT SITES
RIVER MILE 19 TO RIVER MILE 28
2005-2009

SCALE IN FEET

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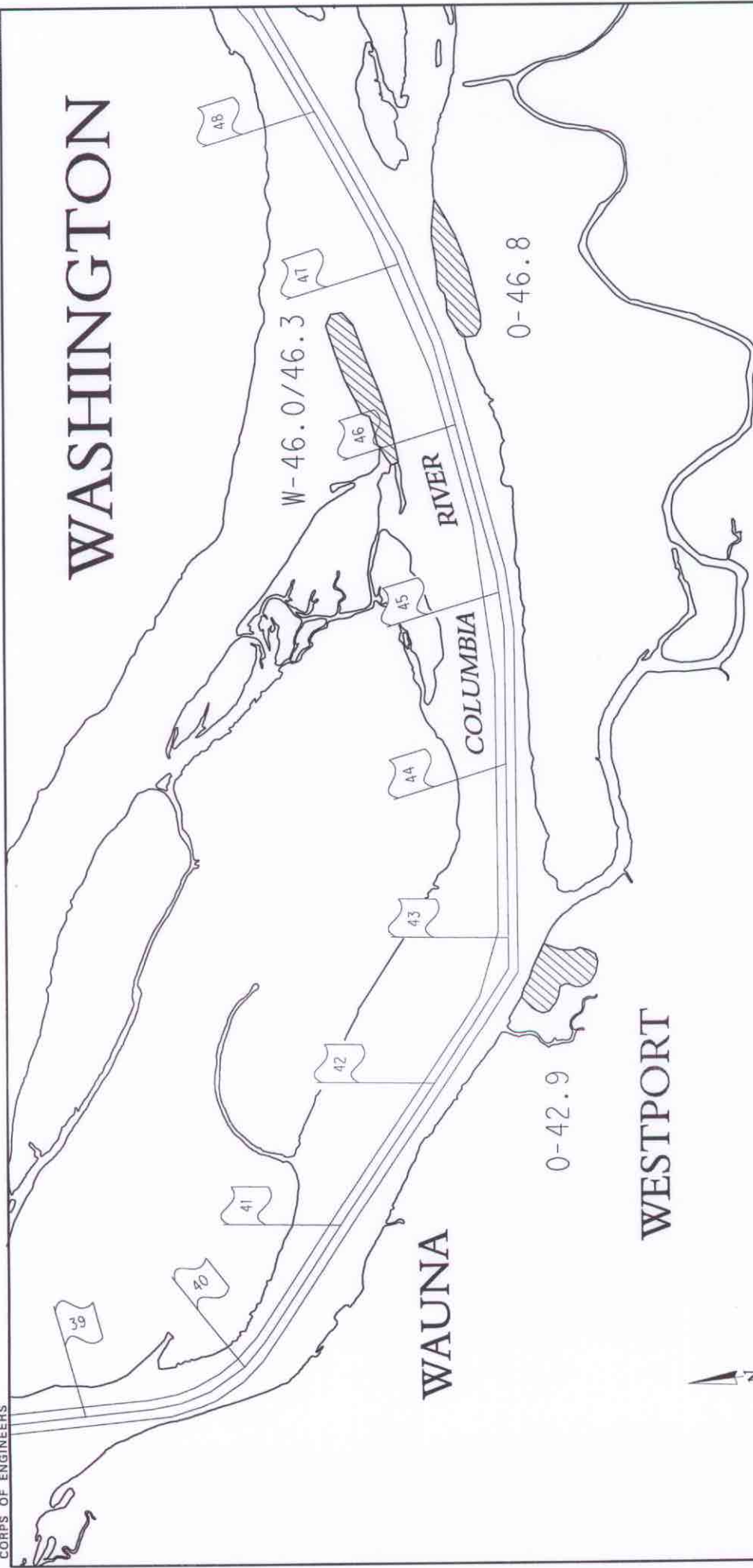


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COLUMBIA RIVER

DREDGING MAINTENANCE

MATERIAL PLACEMENT SITES

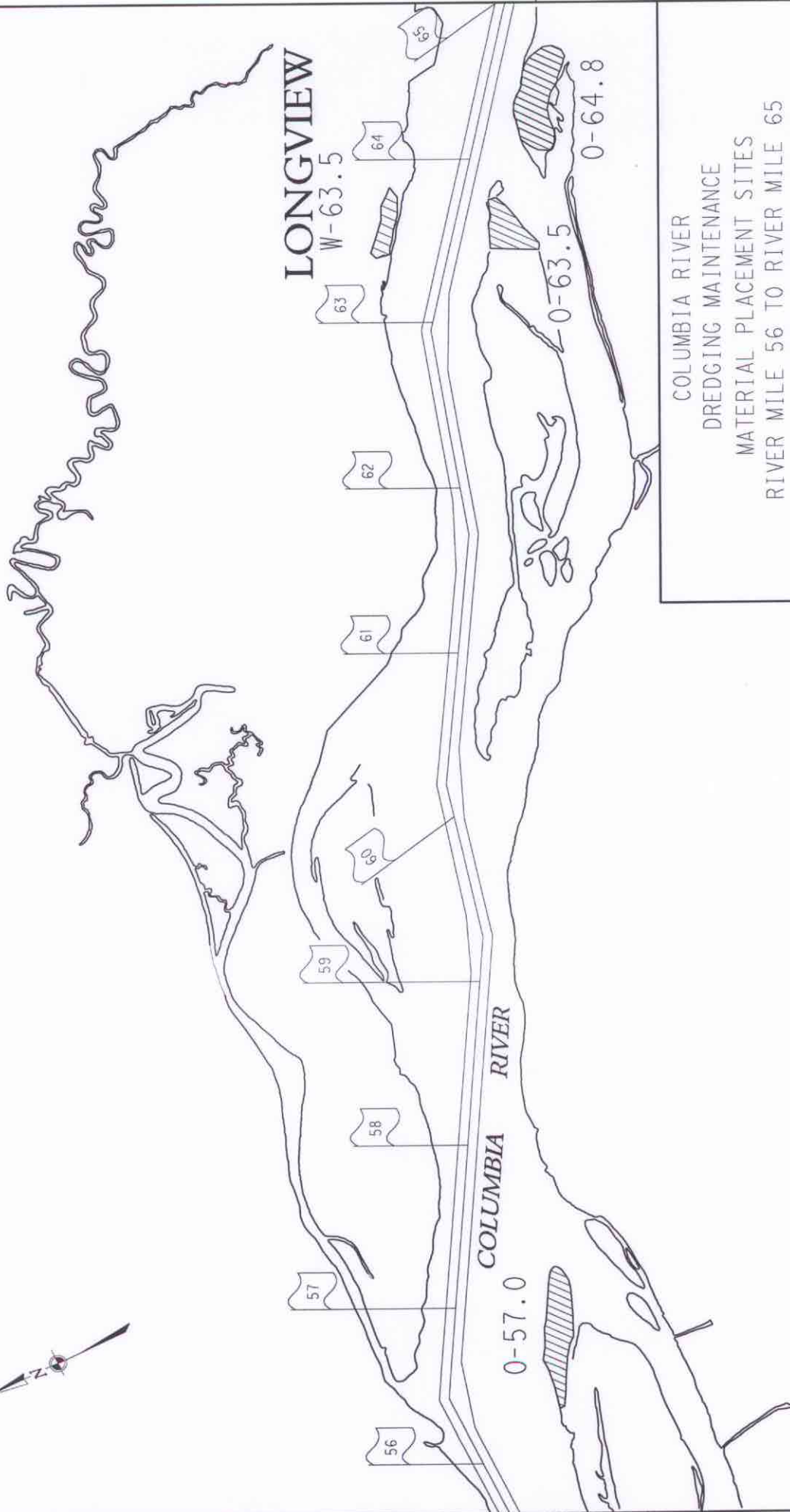
RIVER MILE 39 TO RIVER MILE 48

2005-2009

SCALE IN FEET



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COLUMBIA RIVER

DREDGING MAINTENANCE

MATERIAL PLACEMENT SITES

RIVER MILE 56 TO RIVER MILE 65

2005-2009

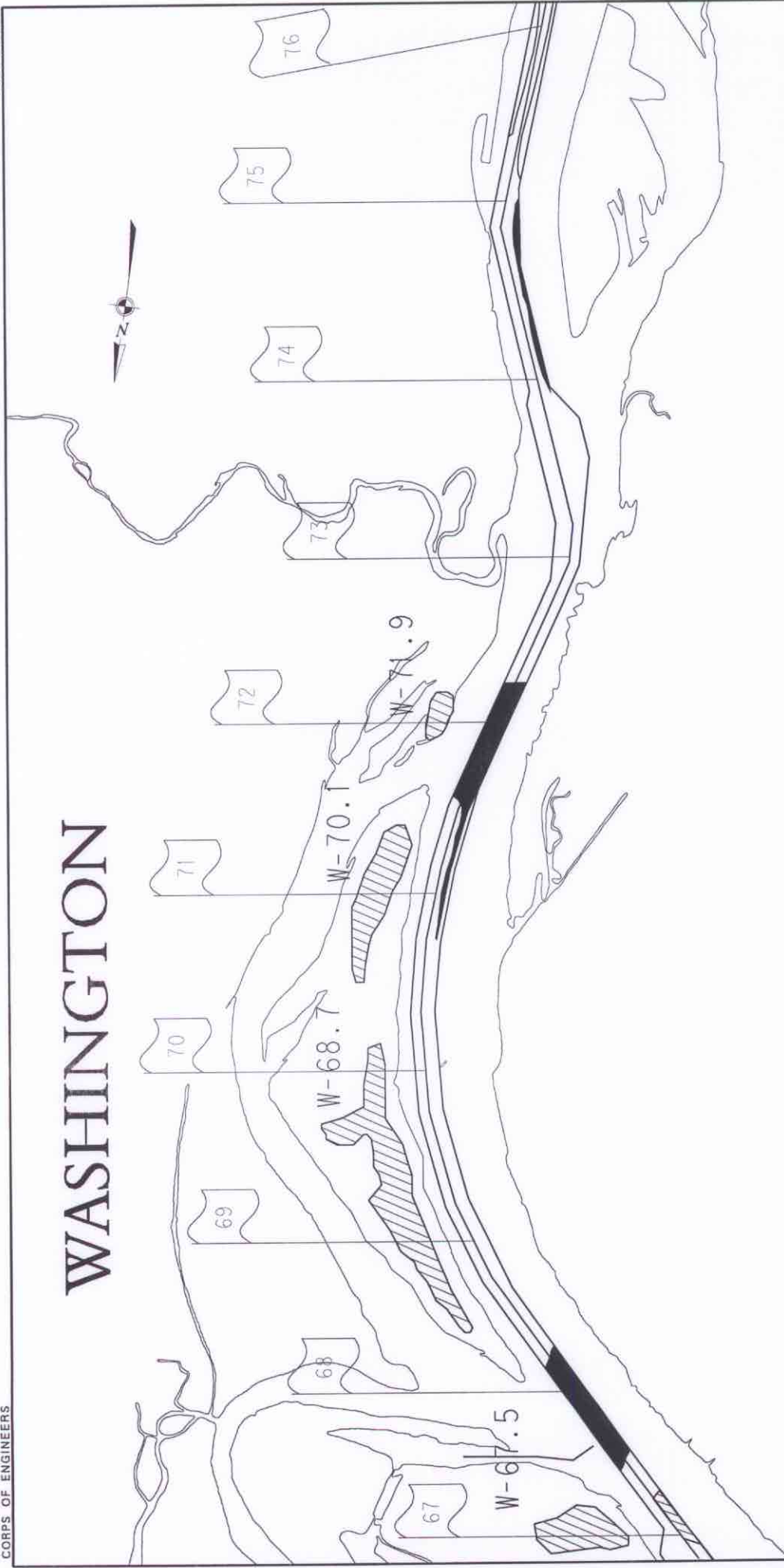
SCALE IN FEET



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COLUMBIA RIVER

DREDGING MAINTENANCE

MATERIAL PLACEMENT SITES

RIVER MILE 67 TO RIVER MILE 76

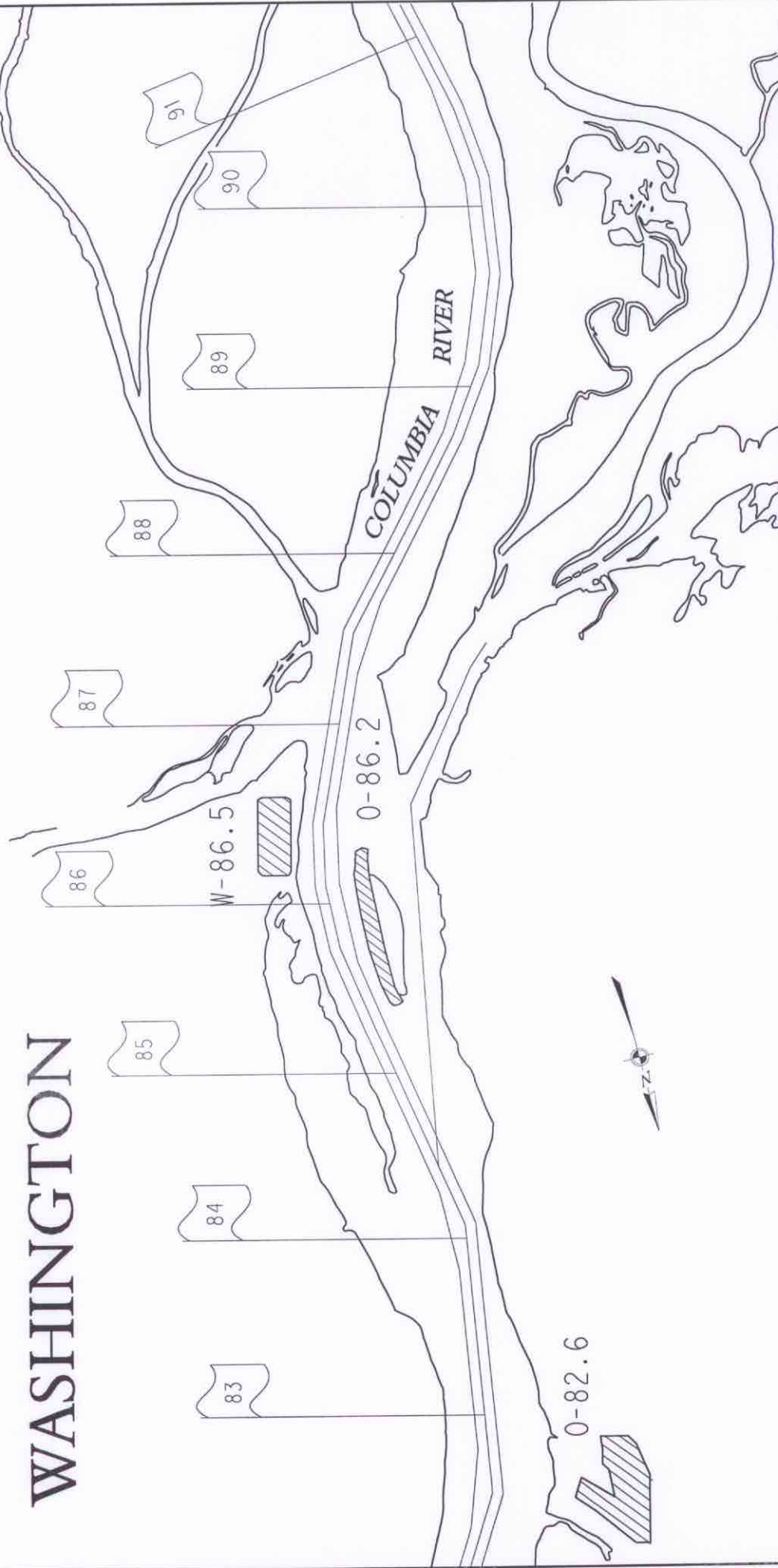
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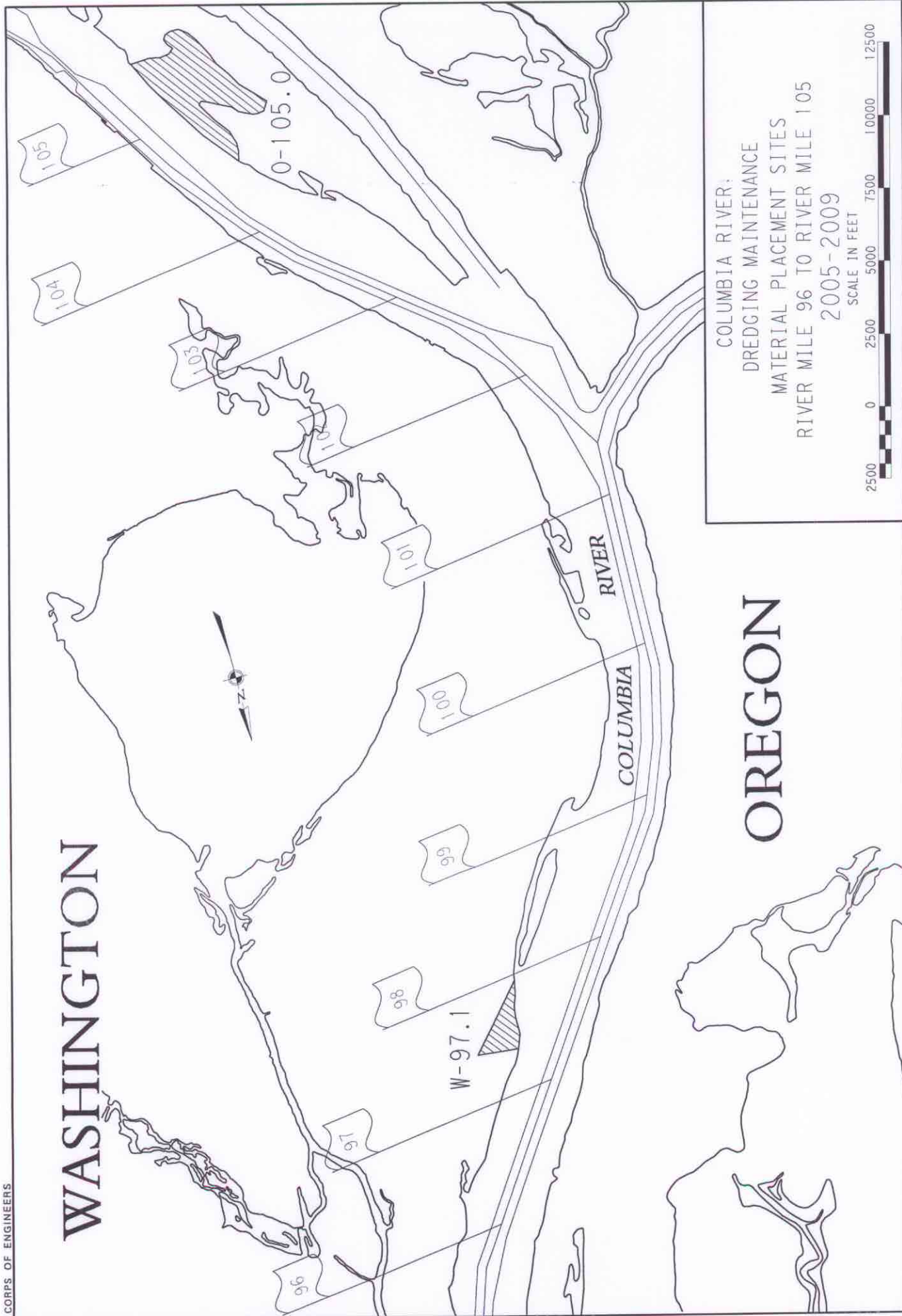
COLUMBIA RIVER
DREDGING MAINTENANCE
MATERIAL PLACEMENT SITES
RIVER MILE 83 TO RIVER MILE 91
2005-2009



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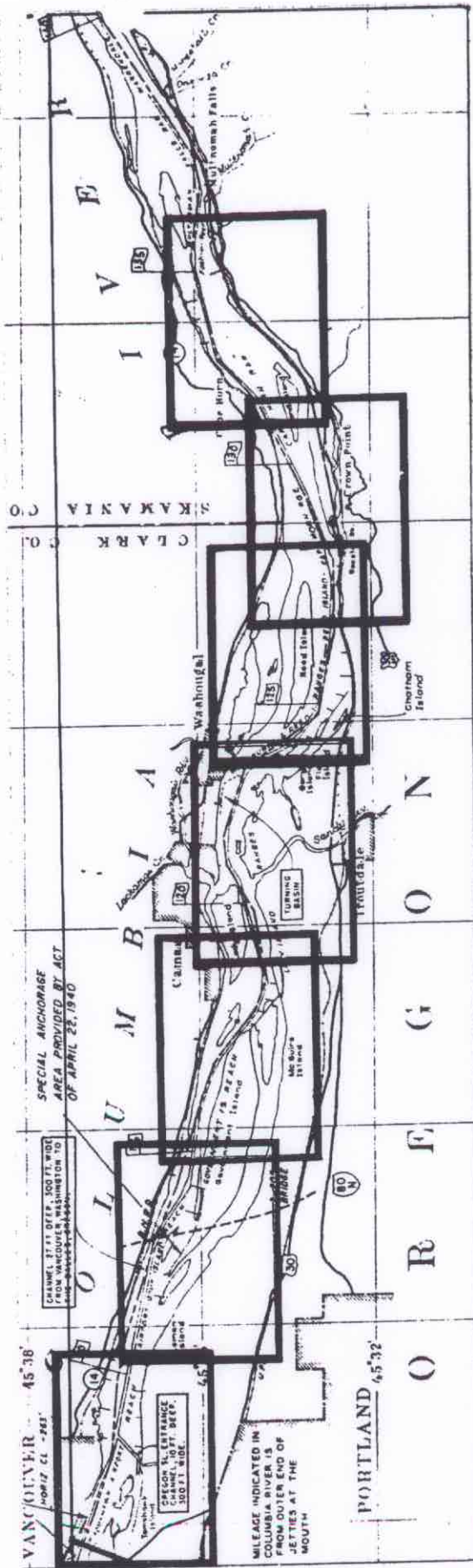
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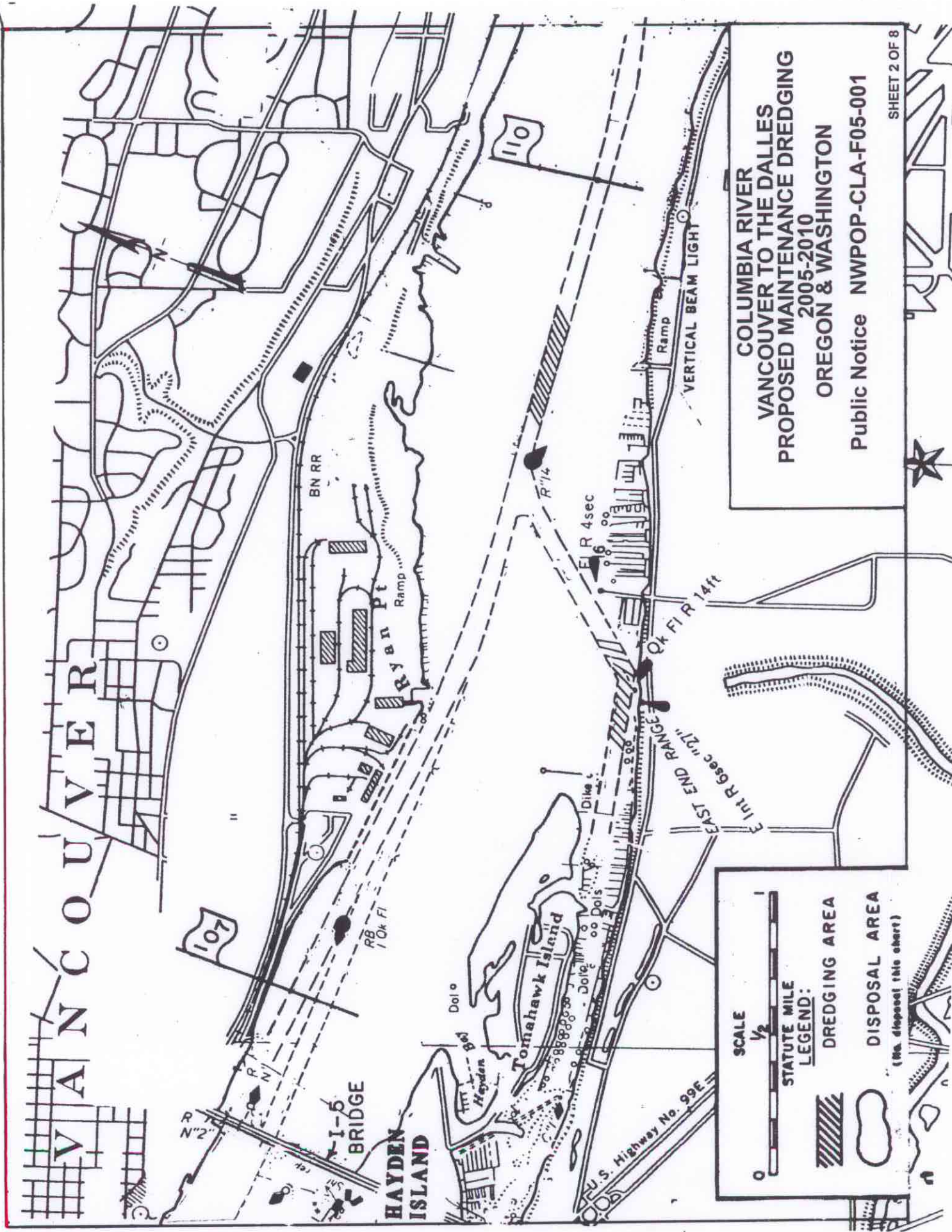
COLUMBIA RIVER:
DREDGING MAINTENANCE
MATERIAL PLACEMENT SITES
RIVER MILE 96 TO RIVER MILE 105
2005-2009

SCALE IN FEET
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**COLUMBIA RIVER
VANCOUVER TO THE DALLES
PROPOSED MAINTENANCE DREDGING
2005-2010
OREGON & WASHINGTON**

Public Notice NWPOP-CLA-F05-001



COLUMBIA RIVER
VANCOUVER TO THE DALLES
PROPOSED MAINTENANCE DREDGING
2005-2010
OREGON & WASHINGTON

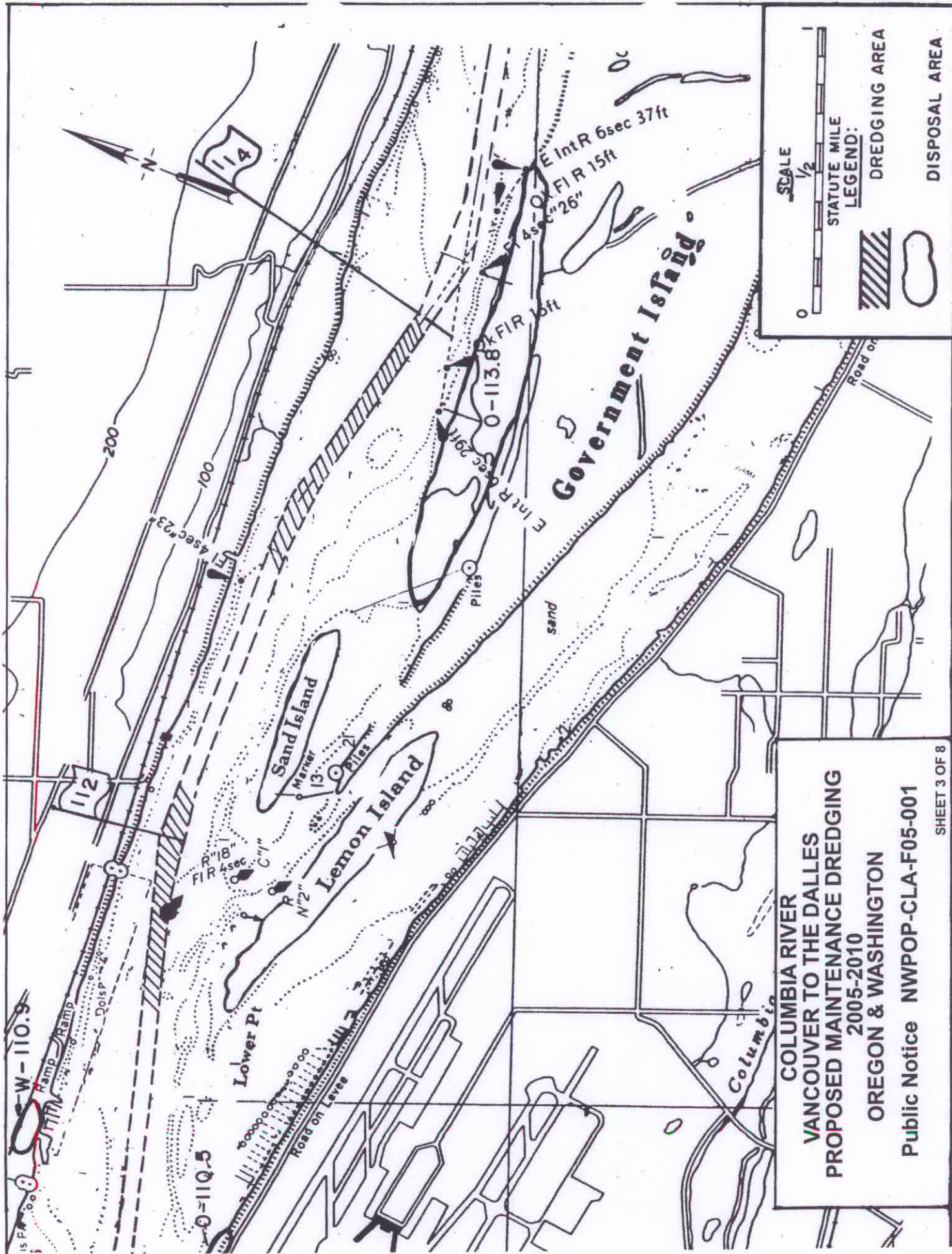
Public Notice NWPOP-CLA-F05-001

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STATUTE MILE

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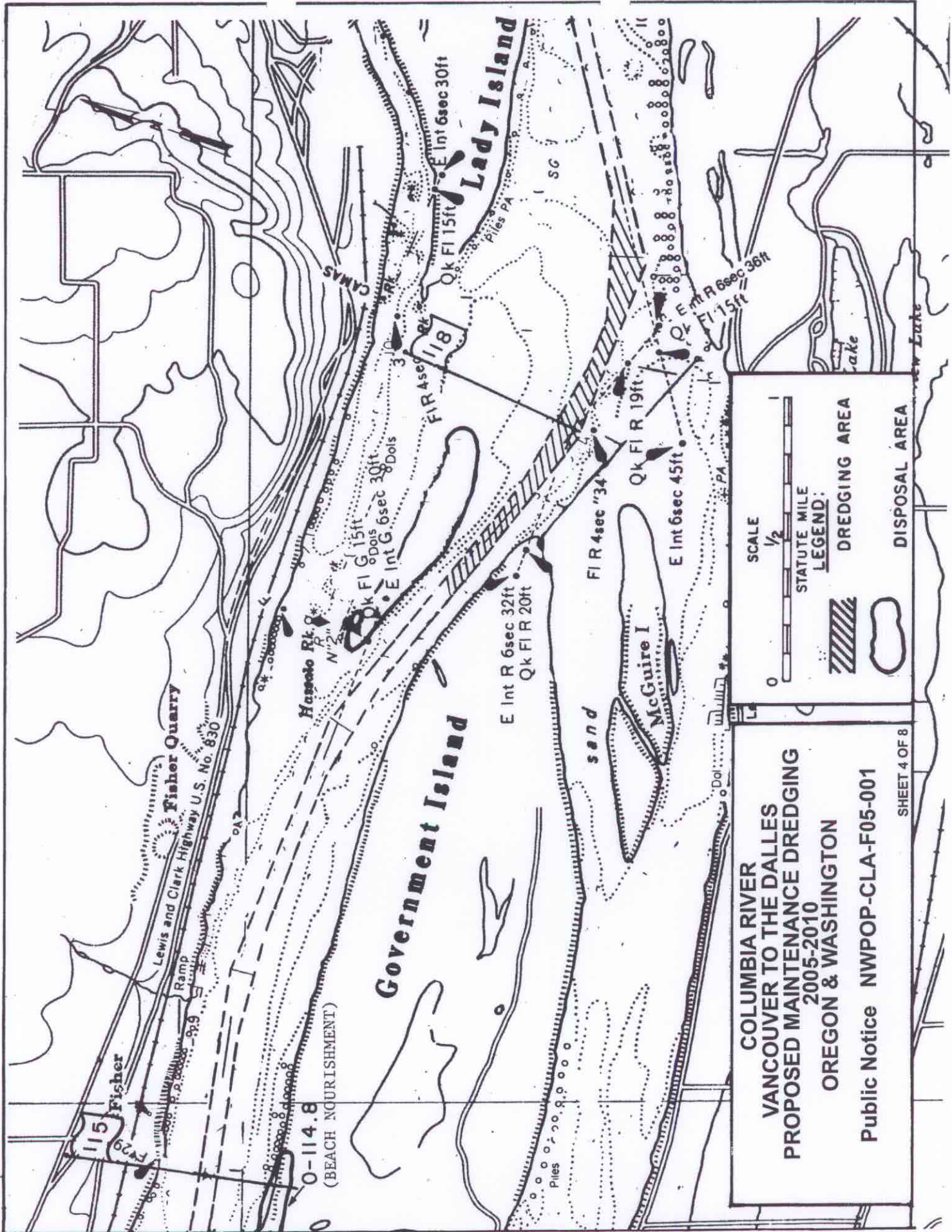
DREDGING AREA

DISPOSAL AREA
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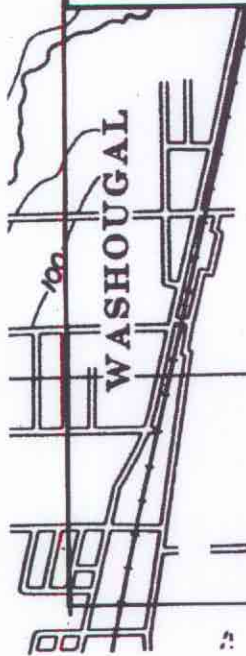
**COLUMBIA RIVER
VANCOUVER TO THE DALLES
PROPOSED MAINTENANCE DREDGING
2005-2010
OREGON & WASHINGTON**

Public Notice NWPOP-CLA-F05-001



COLUMBIA RIVER
VANCOUVER TO THE DALLES
PROPOSED MAINTENANCE DREDGING
2005-2010
OREGON & WASHINGTON

Public Notice NWPOP-CLA-F05-001



WASHOUGAL



LEGEND:



DREDGING AREA



DISPOSAL AREA

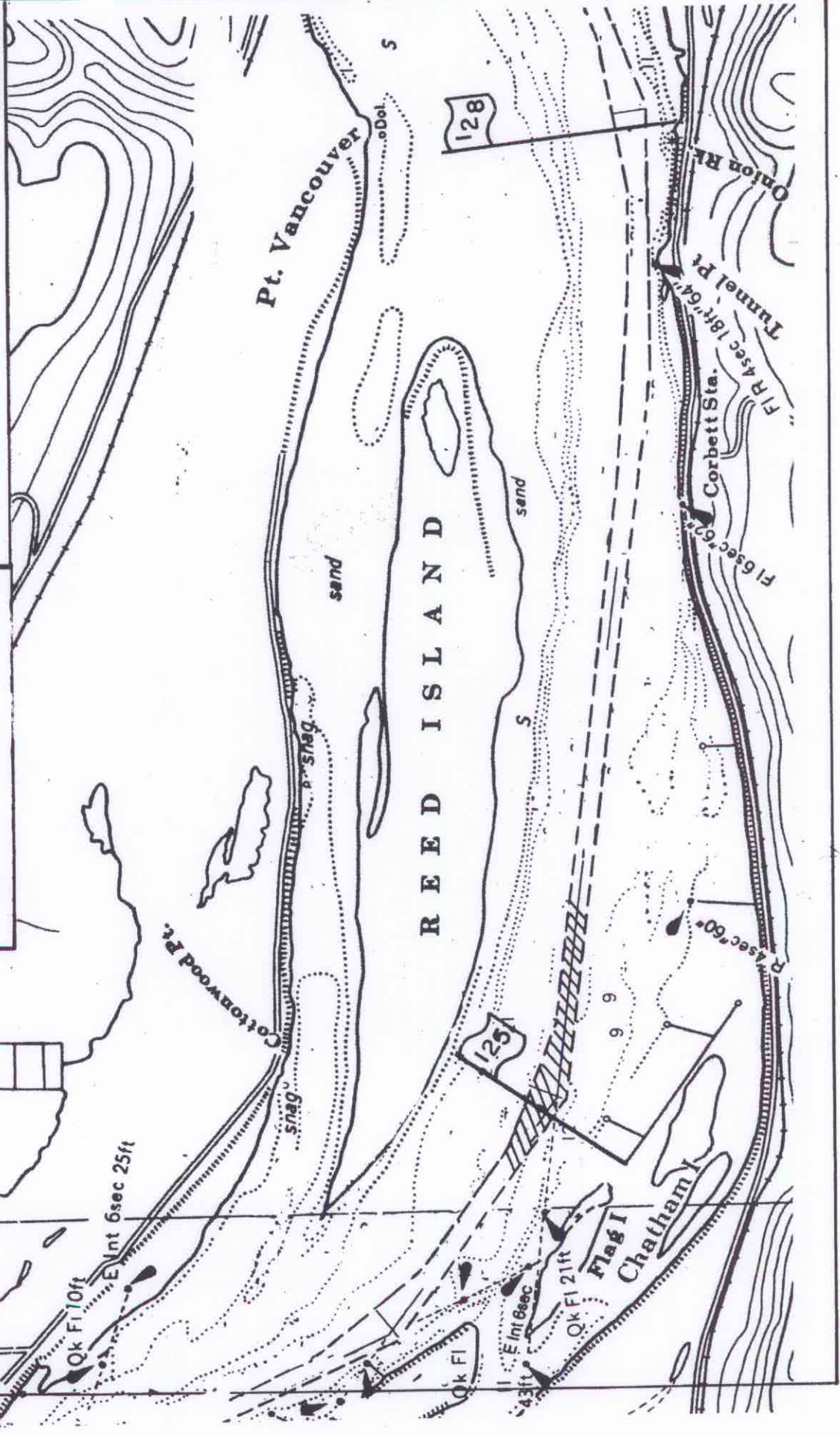
COLUMBIA RIVER VANCOUVER TO THE DALLES PROPOSED MAINTENANCE DREDGING

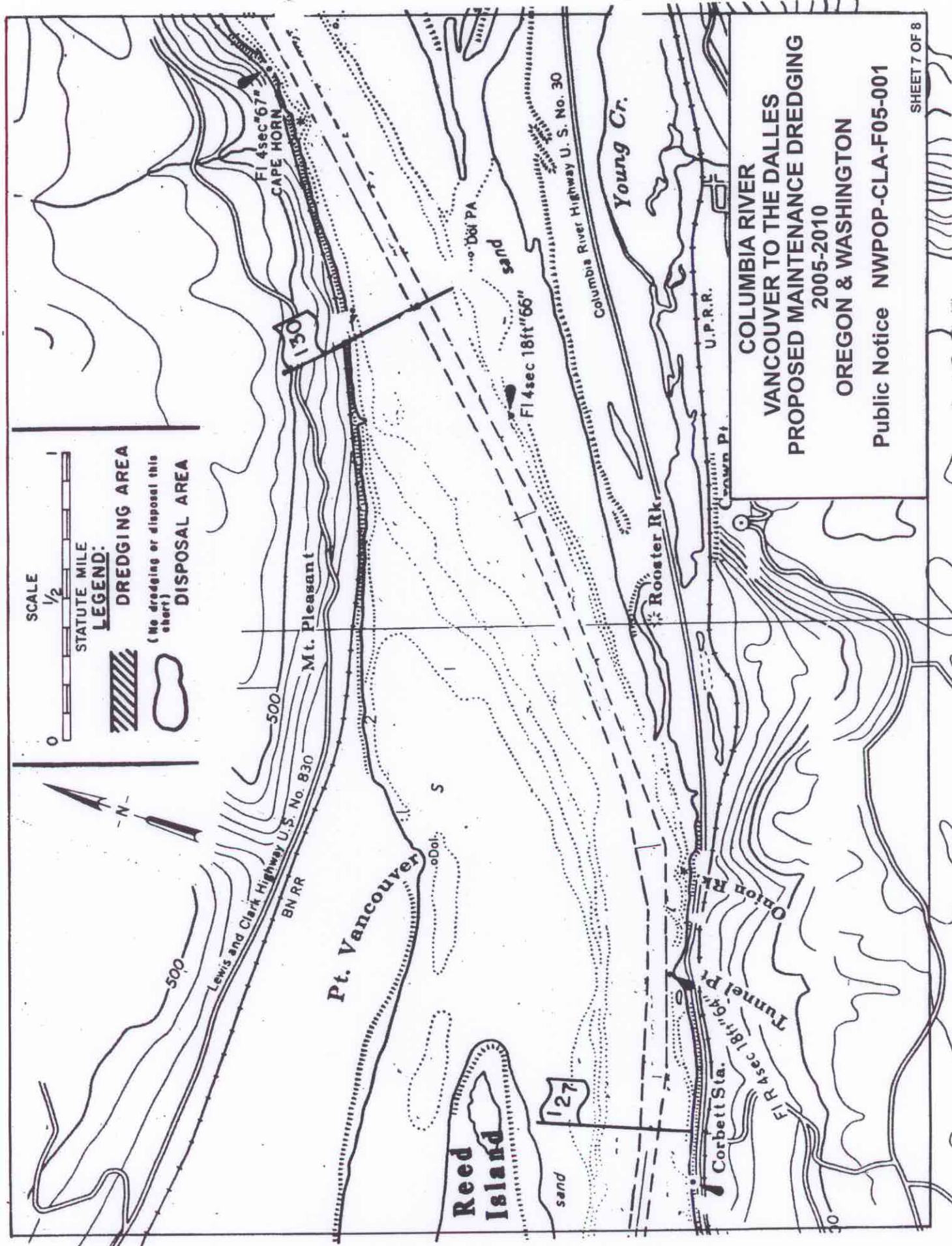
2005-2010

OREGON & WASHINGTON

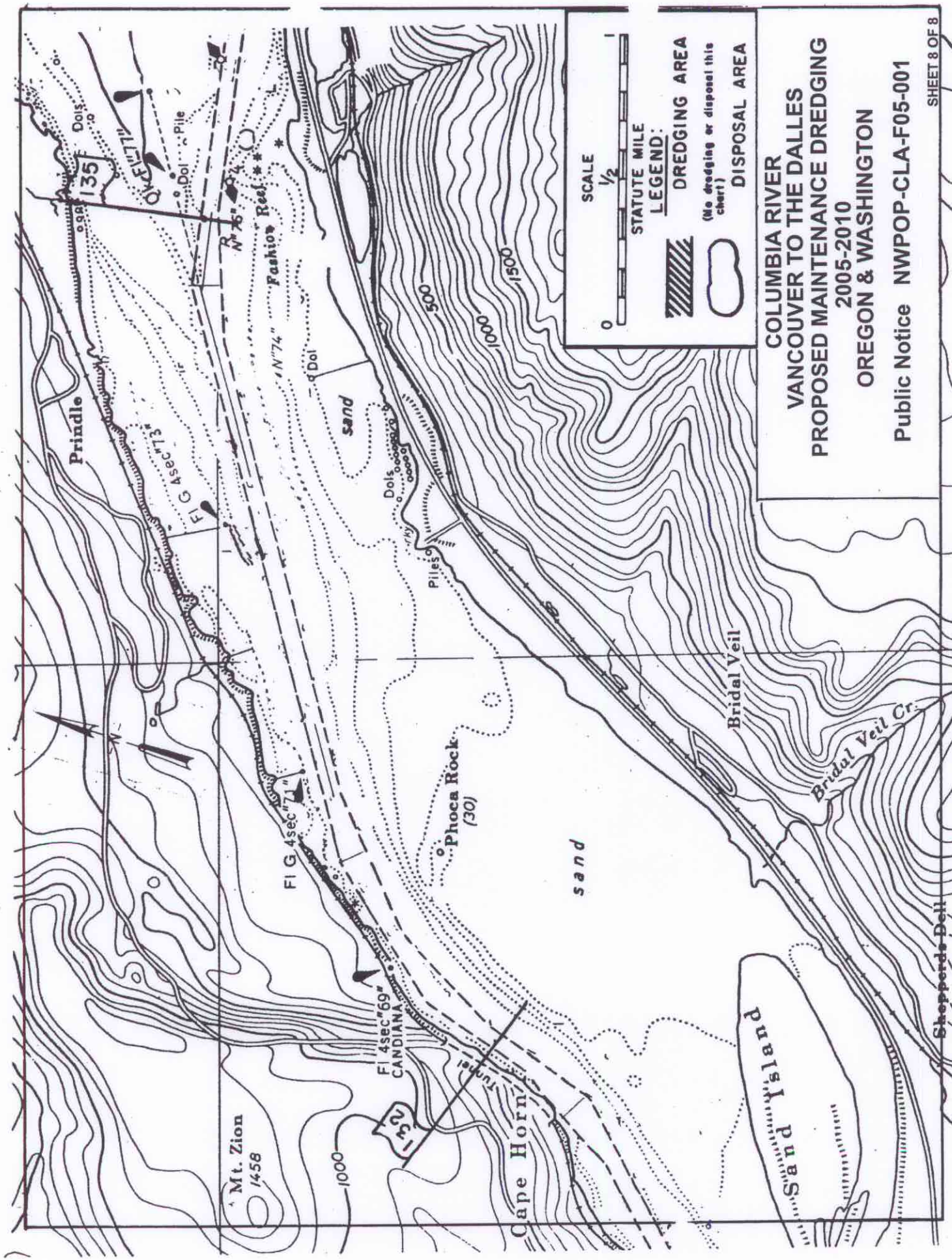
Public Notice NWPOP-CLA-F05-001

SHEET 6 OF 8





COLUMBIA RIVER
VANCOUVER TO THE DALLES
PROPOSED MAINTENANCE DREDGING
 2005-2010
OREGON & WASHINGTON
 Public Notice NWPOP-CLA-F05-001



COLUMBIA RIVER
VANCOUVER TO THE DALLES
PROPOSED MAINTENANCE DREDGING
2005-2010
OREGON & WASHINGTON
Public Notice NWPOP-CLA-F05-001

WASHINGTON

B.N.R.R.

PORT OF
KLIKITAT
PROPERTY

INWATER
PLACEMENT AREA

FLOW

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OR

COLUMBIA RIVER

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OREGON

U.P.R.R.

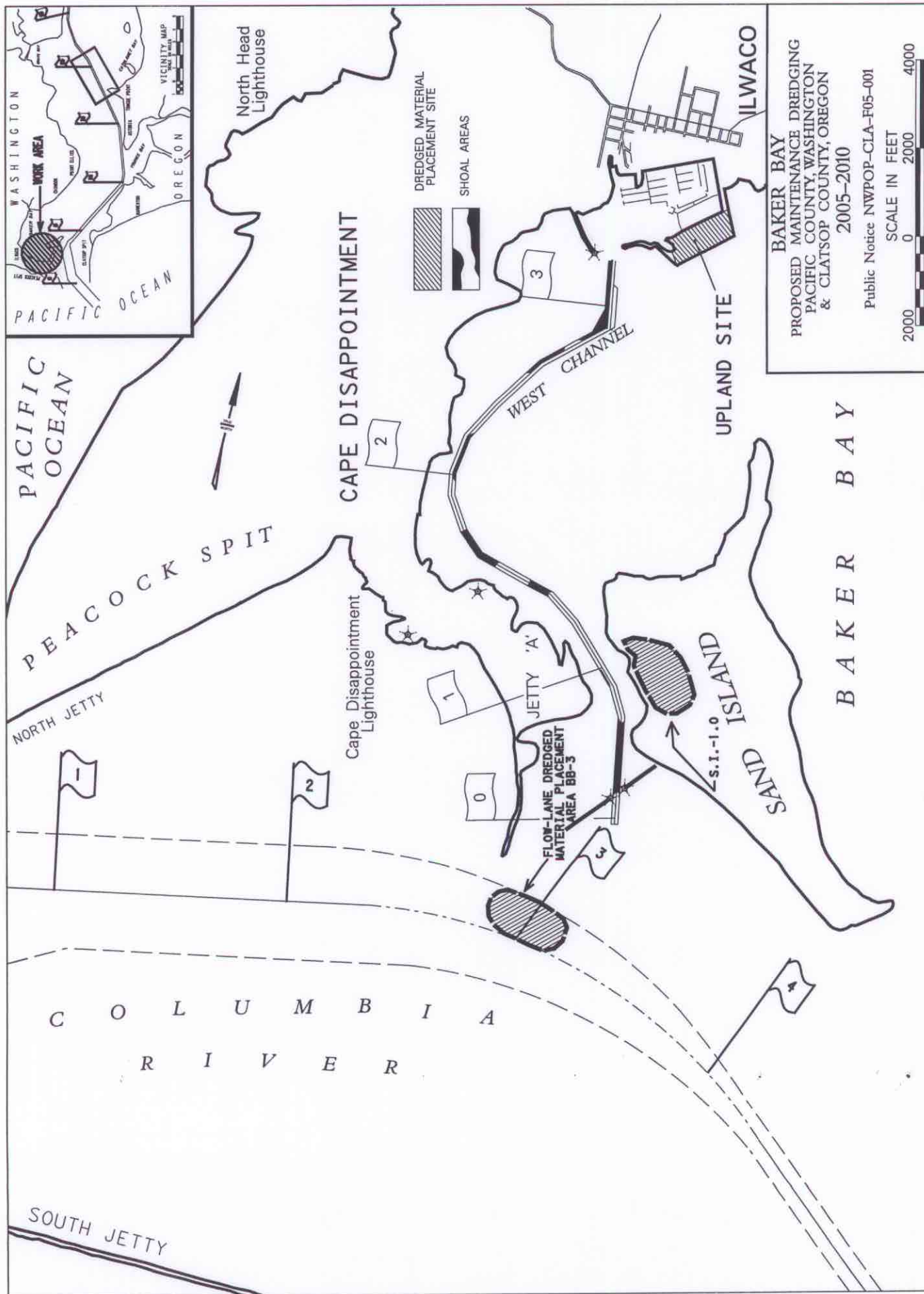
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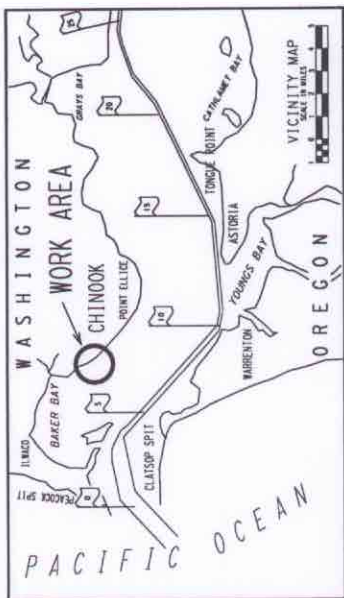
THE DALLES DAM LOCK ENTRANCES
PROPOSED MAINTENANCE
DREDGING AND DISPOSAL - 2005-2010
KLIKITAT COUNTY, WASHINGTON

DREDGING AREA

DREDGED MATERIAL
PLACEMENT SITE







BAKER BAY

CHINOOK

CHINOOK CHANNEL

DENOTES APPROXIMATE AREA
TO BE DREDGED



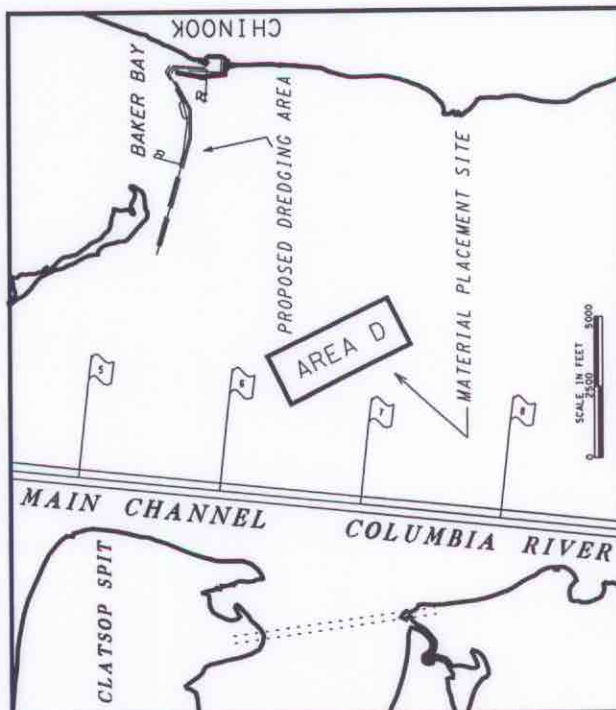
CHINOOK, WASHINGTON
CHINOOK CHANNEL
PROPOSED MAINTENANCE DREDGING

Public Notice NWP0P-CLA-F05-001

2005-2010

SCALE IN FEET

1000 0 1000 2000





50

40

30

20

10



00

EBB
FLOOD

COLUMBIA RIVER

50 53+25

40

30

20

10

FLOW LANE
DISPOSAL AREA

APPROX. 800'
TO FLOW LANE
DISPOSAL AREA



PIPELINE
EASEMENT

SECONDARY BASIN

PRIMARY BASIN

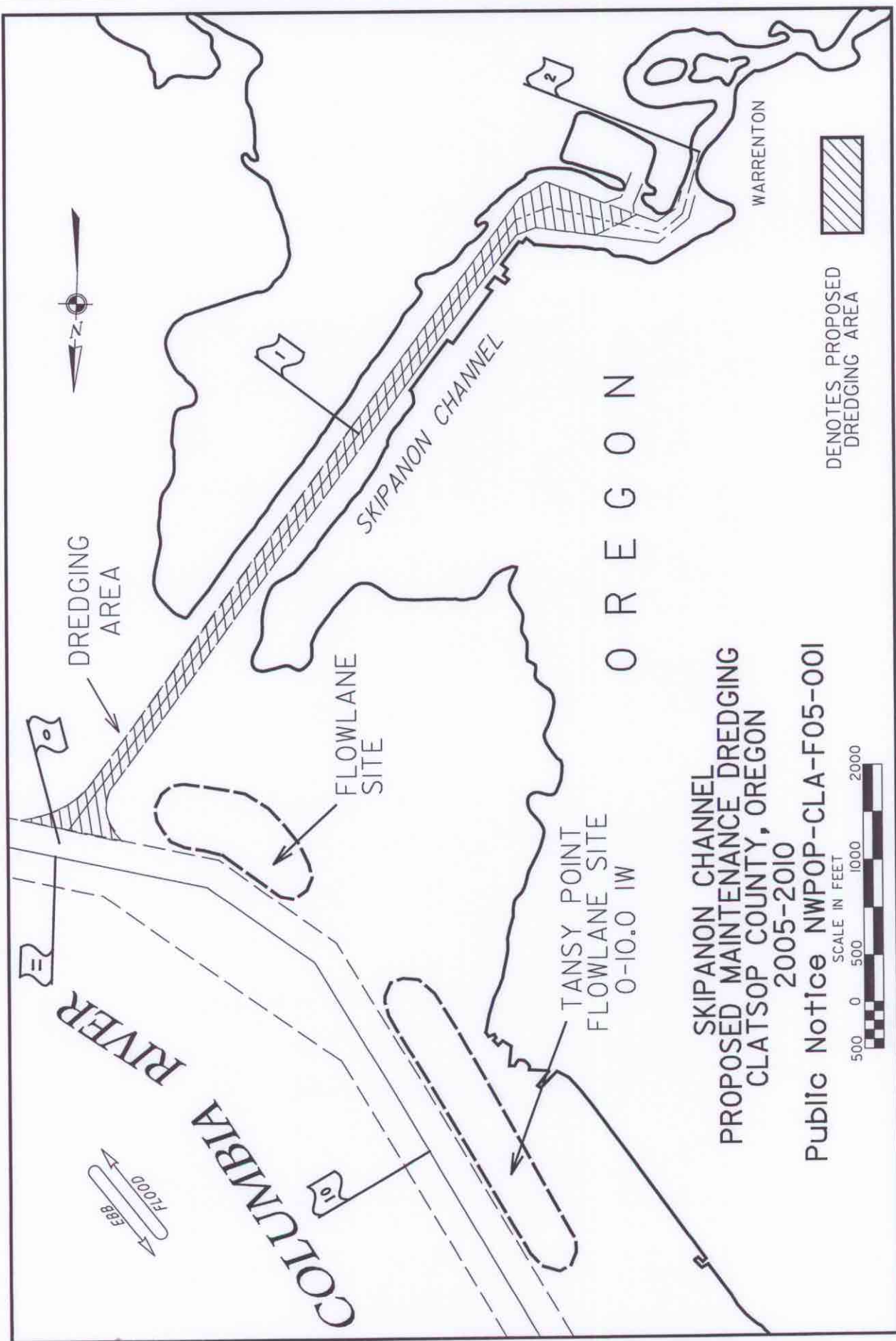
HAMMOND BOAT BASIN

SCALE IN FEET
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O R E G O N

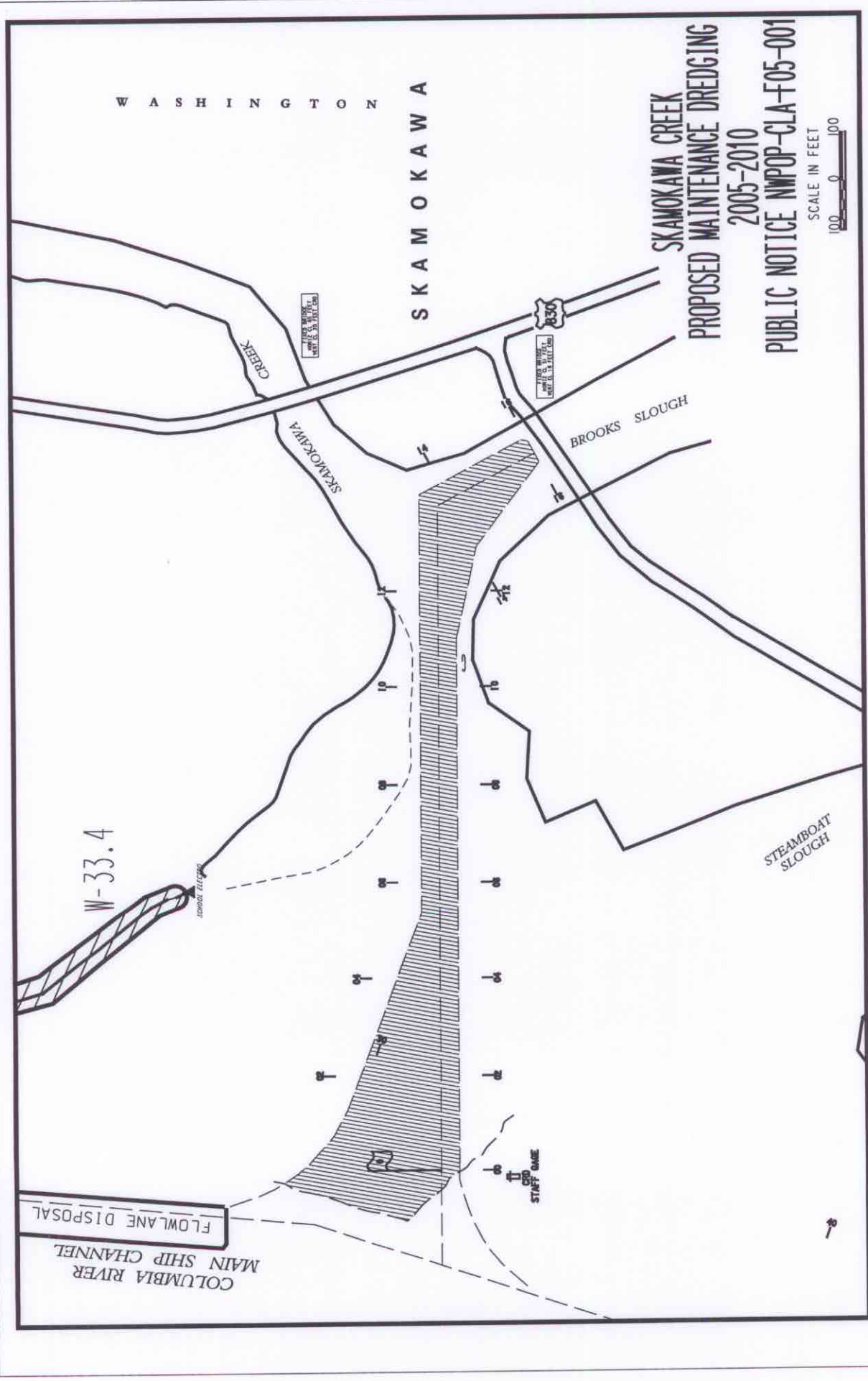
HAMMOND BOAT BASIN
PROPOSED MAINTENANCE DREDGING
2005-2010
CLATSOP COUNTY, OREGON
Public Notice NWPOP-CLA-F05-001



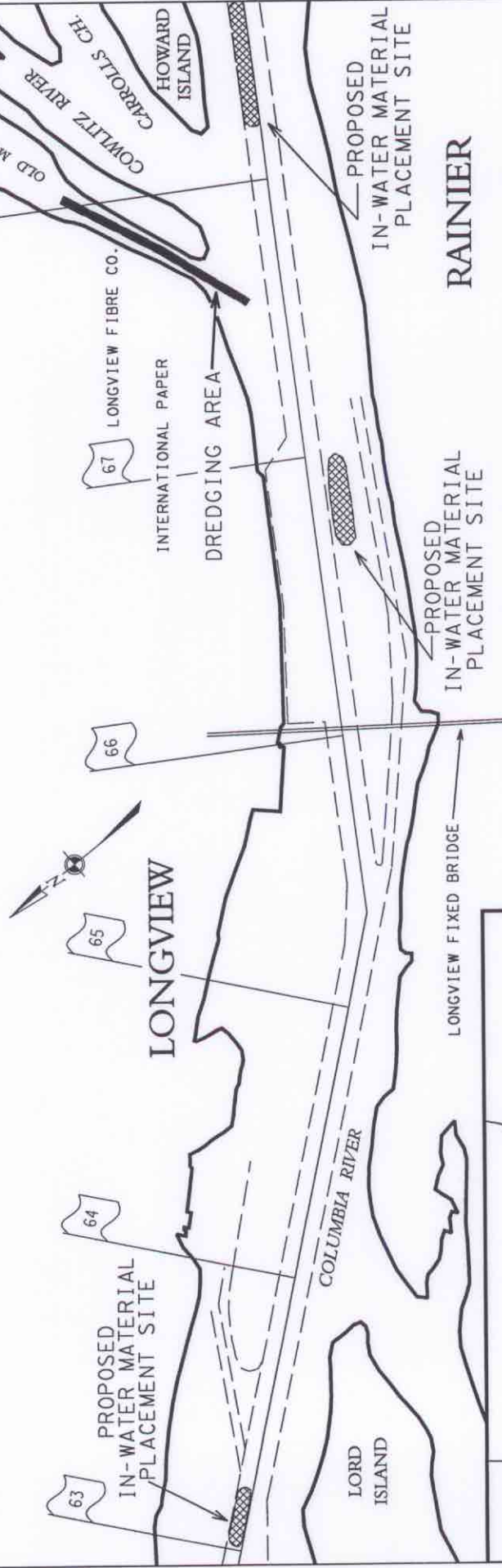
SKIPANON CHANNEL
 PROPOSED MAINTENANCE DREDGING
 CLATSOP COUNTY, OREGON
 2005-2010
 Public Notice NWPOP-CLA-F05-001

DENOTES PROPOSED
 DREDGING AREA

SCALE IN FEET
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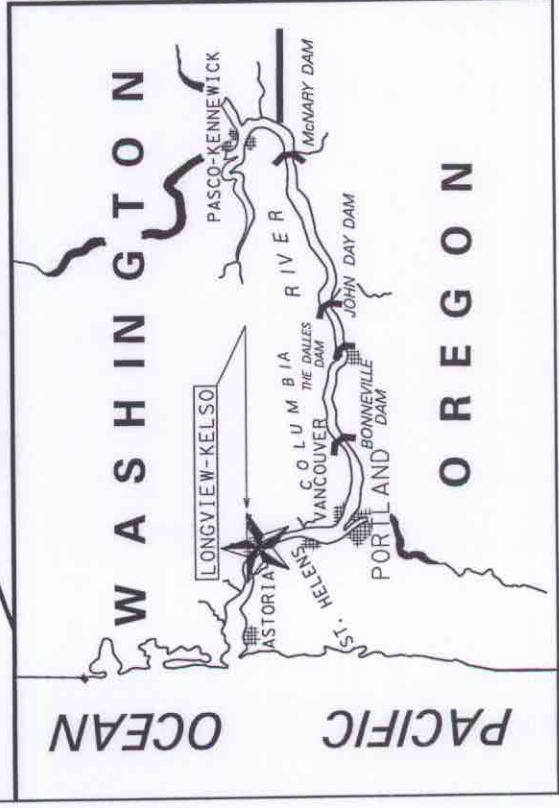


WASHINGTON



RAINIER

OREGON



OREGON

OLD MOUTH COWLITZ RIVER
 PROPOSED MAINTENANCE DREDGING
 COWLITZ COUNTY, WASHINGTON
 2005-2010

Public Notice NWP0P-CLA-F05-001

Section 404(b)(1) Evaluation
Maintenance Dredging of the Columbia River
And Side Channels
River Miles 3 - 192
In Washington and Oregon

I. Introduction

Section 404 of the Clean Water Act (CWA) of 1977, as amended, requires that all projects involving the discharge of dredged or fill material into waters of the United States be evaluated for water quality and other effects prior to making the discharge. All fill materials associated with the Columbia River Maintenance dredging are activities undertaken by or at the direction of the U.S. Army Corps of Engineers. Federal regulations, at 33 CFR 336.1, provide that a Section 404 permit will not be issued for such fill material by the Corps; however, the Corps shall apply the Section 404(b)(1) guidelines to the project. This evaluation assesses the effects of the fill, as described below for the Columbia River maintenance dredging, utilizing guidelines established by the U.S. Environmental Protection Agency (USEPA) in conjunction with the Secretary of the Army under the authority of Section 404(b)(1) of the Act.

II. Description of Proposed Action

Proposed Action

This proposed work is the maintenance of Columbia River main ship channel, from River Mile (RM) 3 through 192 and involves the redistribution of sedimentary material from the Columbia River. The channel passes through Clatsop, Columbia, and Multnomah Counties in Oregon, and Pacific, Wahkiakum, Cowlitz and Clark Counties in Washington. The proposed action is to maintain the channel to the federally authorized depths, (see project descriptions for authorized depths for each segment of the project) periodically removing restricting shoals consisting of naturally occurring sedimentary material. The work will be done in accordance with the final 1998 Dredged Material Management Plan for the Columbia and Lower Willamette River Federal Navigation Project.

Project Descriptions

Columbia River, Oregon to Vancouver, Washington (RM 3 to 106.5)

The Corps annually dredges material from shoaling areas in the Columbia River to maintain the authorized navigation channel. Dredging occurs at various locations from RM 3.0 to 106.5 near Vancouver, Washington. At each location, a dredge may spend anywhere from 3 days to 3 weeks removing sand from the navigation channel, depending on the size of the shoal to be dredged. At any time, there may be up to 2 dredges (a pipeline dredge and a hopper dredge) working at the same time, but in different locations. The authorized channel depth for this section of the Columbia River is 40 feet with a five foot overdraft permitted. Hopper dredges

typically dredge from two to five feet for advanced maintenance and generally pipeline dredges dredge to the full five feet of advance maintenance. The main navigation channel from RM 3-106.5 was recently authorized to a depth of 43 feet plus five feet of overdraft. After the Columbia River Channel Improvement Project (CRCIP) is constructed, the channel will be maintained at 43 feet plus up to five feet of advanced maintenance.

Because of the nature of the riverine shoaling process, timing of dredging in the main channel is relatively inflexible. Material eroding from the main channel side slopes is carried into the channel during the high flows of winter and spring. In many areas of the river, high winter flows cause the formation of sand waves on the bottom of the channel. Sand waves in the Columbia are typically 4- to 8-feet high and 300- to 400-feet long.

Some areas of shoaling will become apparent during the winter months, but for most of the channel, the areas of obstructive shoaling are generally not known until the water (flow) levels begin to recede in the late spring. As the water velocities decrease, there is less energy to move the heavy sands through the system. Consequently, obstructive shoals form and grow in size. The Corps determines the location of shoals by performing hydrographic surveys on a monthly basis beginning in March or April and running through October. In addition, the Columbia River Pilots will call the Corps to report any problem area(s) they might have encountered while transiting the river.

The Corps also is authorized to maintain the following side-channel projects and turning basins: Baker Bay West Channel, Chinook Channel, Hammond Boat Basin, Skipanon Channel, Skamokawa Creek Channel, Wahkiakum Ferry/Westport Slough Channel, Old Mouth Cowlitz River and the upstream entrance channel to Oregon Slough.

Material in the Columbia River system is dredged using pipeline, hopper, and clamshell dredges. The type of dredge used on a shoal depends on several factors, including dredge availability, size and location of the shoal, and disposal options available. Disposal areas include shoreline, upland, flowlane and in-water sites. The amount of dredging that is required varies annually and is dependent on the amount of shoaling present in the channel. Prior to and during each dredging season, bathymetric surveys are used to determine exact dredging locations.

Vancouver, Washington to Bonneville Dam (RM 106.5 to 145)

The main navigation channel from Vancouver, Washington (RM 106.5) to Bonneville Dam (RM 145) is authorized to a depth of -27 feet CRD. Up to 2 feet of advanced maintenance dredging is authorized in the navigation channel from Vancouver to Bonneville Dam. Based on the draft requirements of current users, the channel is maintained below Bonneville Dam only to -17 feet CRD. From RM 106.5 to about RM 125.3, the Corps has performed maintenance dredging using a hopper dredge at two or more locations every year. Maintenance dredging is done annually from Vancouver to Bonneville Dam and occurs during the in-water work period from November 1 through February 28. Disposal areas are all in the flowlane within or adjacent to the channel.

Bonneville Dam to The Dalles Dam (RM 145-192)

The main navigation channel from Bonneville Dam (RM 145) to The Dalles Dam (RM 192) is authorized to a depth of -27 feet. Based on the draft requirements of current users, the channel is maintained only to -17 feet. Up to 2 feet of advanced maintenance dredging is authorized in the navigation channel. Maintenance dredging from Bonneville Dam to The Dalles Dam is conducted during the in-water work period from November 15 through March 15. Dredging is typically done by clamshell dredge with either flowlane or upland disposal.

This channel seldom requires maintenance dredging. Occasionally, the entrances to the navigation locks at both dams need to be dredged. The downstream entrance to Bonneville Dam was last dredged in 1998. A total of 15,600 cubic yards (cy) was removed and placed in-water in the flowlane near RM 140. Maintenance dredging at the downstream entrance to The Dalles Dam was conducted in 1996 and 2001. In 1996, a total of about 2,800 cy were removed, and in 2001, only 979 cy were removed. The dredged material in 1996 was placed upland on Port of Klickitat property upstream of the dam not far from the dredging area. The material dredged in 2001 was placed in-water within the navigation channel downstream of the dam. Previous dredging at all these locations occurred at least 10 years prior. There is a remote possibility that dredging may be required at one or both dams in the next five years. The expected quantities would be similar to past dredging events.

The Hood River Boat Basin entrance channel is located downstream of the mouth of Hood River. It has been dredged twice since the year 2000. In 2001, a clamshell dredge removed about 17,000 cubic yards of sand and placed it in the flowlane near RM 169. There is a strong likelihood that the entrance channel will require dredging in the next five years. A delta at the mouth of the Hood River has grown over the past several years and fills in the entrance channel to the boat basin. The basin is currently being used by large tour boats.

Side Channel Projects

Baker Bay West Channel

The West Channel through Baker Bay begins outside of Baker Bay at the 40-foot federal navigation channel in the Columbia River near RM 2.5 and continues along the western edge of the bay for 2.5 miles to the entrance of Ilwaco Boat Basin. The authorized depth of the channel is 16 feet below MLLW. The channel width is 200 feet for the first 0.5 miles, then 150 feet for the remaining distance. The federally maintained channel ends at the turning and mooring basin, which is maintained by local interests. Advanced maintenance dredging of up to 2 feet is authorized and commonly practiced to ensure that project depth is available between dredging cycles. Dredging is typically done using a clamshell dredge, but a hopper or pipeline dredge has been used previously and may be used in the future. Material dredged from the channel is placed either in the Columbia River flowlane at RM 3 or on West Sand Island. All dredging work takes place during September and October to minimize impacts to crabs and endangered salmonid species.

The following are the total approximate amounts dredged by the contract dredge *DB Sea Vulture* for the Baker Bay Project for Fiscal Years 1997 to 2003.

1997-1999	0 cy
2000	186,306 cy
2001-2002	0 cy
2003	101,193 cy

It is anticipated that the Baker Bay Project will be dredged three times in the next 5 years.

Chinook Channel

The channel leading into Chinook, Washington begins near RM 5 in the Columbia River north of the 40-foot federal navigation channel, and continues to the Port of Chinook. It is a long, narrow channel through an area of extreme shoaling. The authorized depth is 10 feet below MLLW and the width is 150 feet. The 2-mile-long channel ends at the turning and mooring basin, which is maintained by local interests. The channel is dredged to 12 feet below MLLW to ensure that project depth is available between dredging cycles. The Chinook Channel is maintained by clamshell dredge. Material removed from this channel is placed in the estuary in-water disposal site Area D, north of the 40-foot federal navigation channel near RM 7. Dredging takes place during September and October to minimize impacts to crabs and endangered salmonid species.

The following are the total approximate amounts dredged by the contract dredges *Seattle* and *DB Sea Vulture* for the Chinook Channel Project for Fiscal Years 1997 to 2003.

1997-1999	0 cy
2000	297,710 cy
2001-2002	0 cy
2003	144,168 cy

It is anticipated that the Chinook Channel Project will be dredged three times in the next 5 years.

Hammond Boat Basin

The Hammond Boat Basin is located 7 miles from the mouth of the Columbia River on the Oregon side. It was constructed in 1982. The access channel leading into the boat basin is authorized at 10-feet below MLLW and is 1,300-feet long and 100 feet wide. Primarily small boats use the channel. The Columbia River Bar Pilots moor one of their pilot boats in the basin. The channel is dredged to 12 feet below MLLW to ensure that project depth is available between dredging cycles. The Hammond Boat Basin has been maintained historically by pipeline dredge. The Hammond Boat Basin was last dredged in 1990. Approximately 18,000 cy of material was placed in an upland disposal site near the boat basin. Future maintenance will most likely be by pipeline dredge with associated upland disposal, or by clamshell dredge with associated flowlane disposal in the Columbia River. It is anticipated that the Hammond Boat Basin will be dredged once in the next 5 years.

Skipanon Channel

Skipanon Channel begins near RM 10 in the Columbia River and runs up the Skipanon River to Warrenton, Oregon. The channel is authorized to a depth of 30 feet below MLLW, but current users require a depth of only 16 feet. The channel width is 200 feet for the first 1.5 miles, and then it opens up into a turning basin with a width varying from 475 to 225 feet. Shoaling occurs in the turning basin area and from sands that encroach across the mouth of the river. The channel is dredged to 18 feet below MLLW to ensure that project depth is available between dredging cycles.

Skipanon Channel is maintained by both hopper and clamshell dredges. The government hopper dredge *Yaquina* maintains the outer entrance of the channel, and clamshell dredges remove material from throughout the entire channel. Dredged material is placed in the flowlane of the Columbia River downstream of the entrance to Skipanon Channel or at estuary in-water disposal site Area D near RM 7. In 2003, dredging was conducted by *DB Sea Vulture* at the mouth of Skipanon Channel only. Contaminated sediment was detected in one sediment sample (see sediment evaluation discussion below), but was well up-channel of the dredging. The following are the total approximate amounts dredged for the Skipanon Channel Project for Fiscal Years 1997 to 2003.

1998	13,927 cy
1999	9,754 cy
2000	266,845 cy
2001-2002	0 cy
2003	15,366 cy

It is anticipated that the Skipanon Channel Project will be dredged twice in the next 5 years.

Skamokawa Creek

The channel leading into Skamokawa, Washington begins outside the 40-foot federal navigation channel in the Columbia River from RM 33 to 34 and continues toward the town of Skamokawa, ending at the downstream entrance to Brooks Slough. The authorized depth is 6.5 feet below CRD with an additional 2 feet of advanced maintenance dredging depth to ensure that project depth is available between dredging cycles. The Project has not been dredged since 1992.

For the last 30 years, Skamokawa Creek has been maintained mostly by the government agitation dredge *Sandwick*. Material was flushed toward the Columbia River and carried downstream by the river currents. Prior to 1974 it was maintained by pipeline dredge. Future dredging would be done by clamshell dredge. Material would be placed in the flowlane in the Columbia River. Any dredging would occur during the preferred in-water work period from November 1 through February 28. Approximately 5,000 cy of material was dredged and disposed of by flowlane disposal at the mouth of Skamokawa Creek in 1993. There has been no subsequent dredging, and there are no plans by the Corps to dredge in the immediate future.

Local entities however are attempting to secure funding to dredge the channel, and it is possible that it may be dredged once in the next 5 years.

Wahkiakum Ferry/Westport Slough

The Wahkiakum Ferry Channel runs between Puget Island and Westport Slough near RM 43 in the Columbia River. The channel is authorized to a depth of 9.5 feet below CRD and a width of 200 feet. Maintenance dredging is conducted to 12 feet below CRD to ensure that project depth is available between dredging cycles. The ferry channel has been dredged by clamshell dredge and the *Sandwick* in the past. Future dredging will be done by clamshell dredge with flowlane disposal of the material in the Columbia River or in an upland rehandle site. Dredging occurs during the preferred in-water work period from November through February. The following are the total approximate amounts dredged for the Wahkiakum Ferry/Westport Slough Project for Fiscal Years 1997 to 2003.

1998	<i>Sandwick</i> (¹ agitation dredging, volume unknown)
1999-2000	0 cy
2001	25,223 cy
2002	0 cy
2003	0 cy

It is anticipated that Wahkiakum Ferry/Westport Slough will be dredged twice in the next 5 years.

Old Mouth Cowlitz River

The Old Mouth Cowlitz River is located at RM 67 on the north side of the mainstem Columbia River at Longview, Washington. The site is no longer an active component of the Cowlitz River drainage and serves as a port access channel for log handling and rafting operations in the Port of Longview. The Project channel into the Old Mouth Cowlitz River is authorized at a depth of 8 feet below CRD and 150-foot wide. It runs from deep water in the Columbia River to a point approximately 3,800 feet upstream. The channel is dredged to -10 feet CRD to ensure that project depth is available between dredging cycles.

The channel has been dredged historically by pipeline, clamshell, and agitation dredging. Future maintenance will be done using a clamshell dredge with placement of the dredged material in the flowlane of the Columbia River. Dredging occurs during the preferred in-water work period from the beginning of November 1 through February 28. The following are the total approximate amounts dredged for the Old Mouth Cowlitz River Project for Fiscal Years 1997 to 2003.

1997	<i>Sandwick</i> (agitation dredging, volume unknown)
1998	<i>Sandwick</i> (agitation dredging, volume unknown)

¹ Agitation dredging is done using prop wash from a boat. The boat is anchored and the prop wash moves the sand out of the area. It is normally done during ebb tide so the material is carried downstream. Agitation dredging will not be done any longer on the Columbia River.

1999	0 cy
2000	<i>Sandwick</i> (agitation dredging, volume unknown)
2001	0 cy
2002	<i>Sandwick</i> (agitation dredging, volume unknown)

It is anticipated that the Old Mouth Cowlitz River Project will be dredged three times in the next 5 years.

Oregon Slough

Oregon Slough, also known as North Portland Harbor, runs parallel to the Columbia River behind Hayden Island. The downstream end of Oregon Slough is located at RM 102.5 on the south side of the Columbia River just upstream of the confluence of the Willamette and Columbia Rivers. The channel into the Oregon Slough is authorized at a depth of 40 feet below CRD and 400-feet wide. It runs upstream approximately 1.5 miles along Port of Portland Terminal 6. The channel is dredged to 45 feet below CRD to ensure that project depth is available between dredging cycles. The entrance channel to the upstream end of Oregon Slough begins at RM 109 in the main navigation channel. The upper channel is authorized at a depth of 10 feet below CRD and 300-feet wide. It runs a distance of approximately 5,800 feet from the upstream entrance of the slough. The channel is dredged to 12 feet below CRD to ensure that project depth is available between dredging cycles.

The downstream end of Oregon Slough has been dredged historically by pipeline, clamshell and hopper dredging. Placement of the dredged material is in the flowlane of the Columbia River. Dredging may occur at any time during the year, but will normally occur from May through October similar to the deep-draft 40-foot channel. The upstream end of Oregon Slough has been dredged historically by pipeline and clamshell dredging. Future dredging will be done using a clamshell dredge. Placement of the dredged material is in the flowlane of the Columbia River. Dredging of this shallow-draft portion of the channel occurs during the in-water work period from November 1 through February 28.

No maintenance dredging of the downstream section of Oregon Slough occurred from 1997 to 2002. The last time dredging occurred in this location was 1996, when the hopper dredge *Essayons* removed 49,630 cy. The upstream section of Oregon Slough was last dredged in 2001 when a clamshell dredge removed 55,799 cy. The Project is dredged infrequently. However, it is anticipated that both the upstream and downstream sections of the Oregon Slough Project will be dredged once in the next 5 years.

General Description of Dredged or Fill Material

RM 3 to 40

The material in the Columbia River navigation channel, in the RM 3 to 40 reach through the estuary, consists of clean, medium- to fine-grained sands. Fines and organic content are generally less than 1 percent by weight. A chemical analyses of the sediment included inorganic metals (9), total organic carbon, pesticides, PCBs, phenols, phthalates, miscellaneous

extractables, and PAHs. Dioxin/furan(s) analyses were conducted on select samples. Results showed that few chemicals of concern were detectable above the method detection levels. Those that were detectable were at levels well below the DMEF Tier IIB screening levels. Based on these analyses, the material meets the guidelines established in the DMEF for unconfined, in-water placement. The historical data from several thousand additional sediment samples were also analyzed as part of the CRCIP. The results from this analysis further support the conclusion that material in the navigation channel is clean and suitable for unconfined in-water disposal. The Corps also continues to take samples and review samples, as necessary, taken by other entities to further its knowledge base on the quality of sediment in the Columbia River.

A turning basin in the main navigation channel at RM 10 to 13.5 near Astoria, was sampled on June 25, 2003. This material was sampled by a box-core sampler and consists of 99.05 percent sand and 0.95 percent fines with a median grain-size of 0.26 mm. One sample contained several fine-grained sediment clasts (clay balls), with 79 percent fines. This sample which was not considered representative of the material in the area and was not included in the above calculation. Tier IIB chemical testing was conducted on the fine-grained material separately from the coarser-grained material. The resulting data showed slightly higher levels of most contaminants detected, above the surrounding coarser material, but all levels met the DMEF guidelines for in-water placement.

River miles 29 to 34 were sampled at Brookfield Mound and Skamokawa Turn on August 9, 2000 and September 7, 2000. The mound was sampled with box-core and vibra-core samplers. While this material is outside the federal channel, it is considered representative of the channel material, because it was created from material dredged from the channel. The combined average for all the material tested from August was 99.14 percent sand and 0.86 percent fines with a median grain size of 0.35 mm. The combined average for all the material tested from September was 99.30 percent sand and 0.70 percent fines with a median grain size of 0.36 mm.

River miles 6 to 45 were sampled by a box-core sampler in June 1997. The material consisted of 99.05 percent sand and 0.95 percent fines with a median grain size of 0.34 mm. Of the 28 samples collected from this reach, three samples contained uncharacteristic amounts of fine-grained material and were not used in the above calculations. One sample was collected well outside the channel and was not representative of channel material. The second sample was collected in the same area that contained the clasts as described in the June 25, 2003 Astoria sampling event; the fine-grained clasts in it were not analyzed separately, and as a result the clasts distorted the percentage of fines in the sample analyses. The clasts were determined to be from an eroded embankment near the shore. The third sample contained more fines than the samples collected on either side of it. The level of clay in this sample was 0 percent, however. This sample was collected just downstream of the RM 29 sampling described above, which contained over 99 percent sand.

As part of the CRCIP, the navigation channel in the RM 38 to 106.5 reach was sampled in June 1997. The material was sampled by a box-core sampler and consists of 99.75 percent sand and 0.25 percent fines, with a median grain-size of 0.61 mm. Of the 82 samples collected from this reach, 3 samples contained uncharacteristic amounts of fine-grained material and were not used in the above calculations. Two samples were collected well outside the channel or below -50

feet CRD and are not considered representative of the channel shoal material. The third sample was collected from the Morgan Bar dredged material flowlane disposal site which had received material from the Willamette River prior to the June 1997 sampling event. Subsequent sampling of this sample location at RM 100 was conducted in 2001. A composite of the three samples in 2001 was submitted for physical analysis. Mean grain size for the composite sample was 1.14 mm, with 10.23 percent gravel, 89.71 percent sand, and 0.06 percent fines.

RM 40 to 106.5

In 2001, 25 samples were collected from the north side of the federal navigation channel and the adjacent near-shore area for PCB contamination from the former ALCOA aluminum plant (at RM 103). This sampling was conducted to confirm PCB contamination and further characterize the federal channel and adjacent sediments for possible contaminants from this source. Dredging in this portion of the channel was not scheduled or anticipated at the time. While PCBs were detected in near-shore samples, no PCBs were detected in samples from, or immediately adjacent to, the federal navigation channel at RM 103.

One vibra-core sample was analyzed in two 4-foot lifts. The two lifts were submitted for physical analyses including total volatile solids and were analyzed for metals (9 inorganic), total organic carbon, pesticides and PCBs, phenols, phthalates, miscellaneous extractables, PAHs, organotin, and dioxin/furan. An additional 24 surface grab samples were analyzed only for pesticides and PCBs. None of the contaminants tested were found to be at or above their respective screening levels in the two vibra-core samples. In the six grab samples taken nearest to the shore, Aroclor 1248 (a PCB) was found at levels that exceeded the screening level of 130 ug/kg for total PCBs. These samples would need to be further characterized by Tier III testing to determine its suitability for inwater disposal if dredging would be needed in this area. All samples showing contamination above screening levels were well outside the federal navigation channel, and would not be disturbed by normal maintenance dredging operations.

Hopper and pipeline dredges generally do not produce large amounts of turbidity or total suspended solids during dredging because of the suction action of the dredge pump and because the draghead is buried in the sediment. Because of the sandy, large-grained nature of the sediment, there is no expectation of a resuspension of toxins by either the dredging or disposal activity in this area.

RM 106.5 to 145

On August 25, 1999, 12 box-core surface sediment samples were collected from shoals at 6 stations in the Columbia River at RMs 106, 113, 114, 118 and 125. Four of the 12 samples were collected near the I-5 Bridge (approximate RM 106), 2 samples from the main channel, and 2 from the alternate barge channel, under the wide span of the I-5 Bridge, which connects to the main channel 7,500 feet upstream. Collection and evaluation of the sediment data was completed using guidelines from the DMEF. The material collected consisted of 8.7 percent gravel, 89.8 percent sand, and 1.6 percent silt/clay. The median grain size was 0.87 mm, in the range of coarse sand (mean 1.3 mm very coarse sand) and 0.87 percent volatile solids. The DMEF has characterized the sediment in this reach of the Columbia River as “exclusionary.”

Visual and laboratory physical analyses confirm the exclusionary ranking. The material represented by the samples collected from the Columbia River sites is considered suitable for either unconfined in-water or upland placement without further characterization.

Hopper dredges generally do not produce large amounts of turbidity or total suspended solids during dredging because of the suction action of the dredge pump and because the draghead is buried in the sediment. Because of the sandy, large-grained nature of the sediment, there is no expectation of a resuspension of toxins by either the dredging or disposal activity in this area.

RM 145 to 192

Hood River Boat Basin at the Port of Hood River is located on the downstream side of Hood River. Hood River boat basin entrance channel is only dredged on an as needed basis. It was last tested in September 1991. If additional dredging is required the sediment will be tested prior to dredging. In the 1991 testing, seven screening levels were applied to the samples. The results showed that compared to the current DMEF screening levels, the chemical values were below DMEF levels. Testing data is available along with maps showing testing locations on the Corps webpage at: <http://www.nwp.usace.army.mil/ec/h/hr/sqer.htm>.

If river miles 145-192 need to be dredged in the future, sediment sampling would take place as specified in the DMEF prior to dredging. The Corps would provide the results for review to Washington Department of Ecology and the Oregon Department of Environmental Quality before proceeding with dredging activities.

Side Channels

The following discussions of the side channel projects are taken from the Corps' sediment evaluation reports for each project. These reports are available at <https://www.nwp.usace.army.mil/ec/h/hr/sqer.htm>. Baker Bay acts as a sediment trap and most of the sediment is fine-grained material that has settled out from the Columbia River. Sediment is coarser closer to the entrance of the bay. Construction of Jetty A near the entrance to Baker Bay, as well as pile dike fields and the migration north of East and West Sand Islands as a result of navigation improvements, has constricted the entrance to the bay and reduced circulation. This has likely resulted in the sediments being finer now than historically. Sediment in the Hammond Boat Basin is primarily sandy, clayey silt with 80 to 96 percent fines. It is likely that sediment type was less fine prior to breakwater construction because of the reduced circulation with the breakwaters in place.

Sediment in Skipanon Channel is primarily sandy silt with approximately 76 percent fines. Prior to constructing the channel, the sediment may have been finer because the channel area was likely shallower. Skamokawa Creek sediments are primarily sandy silt with concentrations of silt and clay up to 22 percent. It has a fairly large drainage area and alterations of the habitat in the basin have, over time, likely increased the sediment input into the mouth.

The Wahkiakum Ferry channel is part of the main Columbia River channel and is predominantly sand with only 1.2 percent fines. This is likely representative of historical conditions. The

Westport Slough channel is a backwater slough area where the sediment consists primarily of sandy silt in the dredging area at the entrance. This material is likely coming from an upriver shoreline disposal site. Consequently, the material in the slough above the mouth is likely finer grained, which may be more typical of historical conditions.

At the Old Mouth Cowlitz River channel, the currents tend to eddy and the sediment is primarily from the Columbia and Cowlitz Rivers. The material is mostly silty sand with up to 96 percent fines. It is likely that this material is finer than historically found here since the mouth area functions as a sediment trap, and there is no flushing flow from upstream in the channel. Sediment in the Oregon Slough upper end channel is typical of the Columbia River, ranging from poorly graded sand to silty sand with fines less than 5 percent.

Description of the Proposed Discharge Sites

RM 3 to 40

Disposal of dredged material in this reach occurs primarily by flowlane disposal, although shoreline and upland disposal also may be used. Flowlane disposal is done in the main channel of the river. When the hopper dredge uses flowlane disposal, the impact area is directly below the hopper and downstream of the hopper where the current carries the sediment load. Sand falls out of suspension quickly and therefore, the plume of suspended sediment quickly dissipates. When pipeline dredges use flowlane disposal, the end of the disposal pipe is always placed at 20 feet in depth and the sediment is released at that depth. The plume from pipeline flowlane disposal would be deep enough to have little to no impact on salmonids.

Shoreline disposal at Miller Sands (RM 23.5) and near Skamokawa Vista Park (RM 33.4) has the greatest potential for impacting the shallow shoreline areas that are known to be utilized by migrating and rearing juvenile salmonids. These shoreline sites, however, are highly erosive and do not contain many of the important habitat features for juvenile salmonids, such as low velocity, vegetation, and food sources. In an unstable bank environment such as this site, a higher level of suspended sediment and turbidity are a natural occurrence. In addition, while high levels of turbidity are known to affect salmonid physiology and feeding success, the combined background and project-related turbidity concentrations are well below known salmonid impact levels.

RM 40 to 106.5

Disposal of dredged material in this reach is primarily by flowlane and upland disposal, although shoreline disposal also may be used. Flowlane disposal is done in the main channel of the river. When the hopper dredge uses flowlane disposal, the impact area is directly below the hopper and downstream of the hopper where the current carries the sediment load. Sand falls out of suspension quickly and therefore, the plume of suspended sediment quickly dissipates. When pipeline dredges use flowlane disposal, the end of the disposal pipe is placed at 20 feet in depth and the sediment is released in the channel. The plume from pipeline flowlane disposal would be deep enough to have little to no impact on salmonids.

Shoreline disposal at Sand Island (RM 86.2) has the potential to impact the shallow shoreline area that is used by migrating and rearing juvenile salmonids. However, the Sand Island disposal site is highly erosive and does not contain many of the important habitat features for juvenile salmonids such as low velocity, vegetation, and food sources. In an unstable bank environment, such as this site, there is a higher level of suspended sediment and turbidity that are a natural occurrence. In addition, while high levels of turbidity are known to affect salmonid physiology and feeding success, the combined background and project-related turbidity concentrations are well below known salmonid impact levels.

RM 106.5 to 145

Disposal of dredged material in this reach is solely in the flowlane. Flowlane disposal is done in the main channel of the river. When the hopper dredge uses flowlane disposal, the impact area is directly below the hopper and downstream of the hopper where the current carries the sediment load. Sand falls out of suspension quickly and therefore, the plume of suspended sediment quickly dissipates.

RM 145 to 192

Disposal of dredged material in this reach is solely in the flowlane. Flowlane disposal is done in the main channel of the river. When the clamshell and barge operation uses flowlane disposal, the impact area is directly below the barge and downstream where the current carries the sediment load. Sand falls out of suspension quickly and therefore, the plume of suspended sediment quickly dissipates.

III. Alternatives

Alternative 1 – No Action

Alternative 1 was predicated on use of disposal sites addressed in the 1994 EA for Columbia River maintenance dredging. Many of the 111 sites addressed in the 1994 EA were not carried into Alternative 1, including some sites used in the last 10 years, because of a reduced future need for disposal capacity. Alternative 1 sites have been used in the last 10 years for disposal and include 24 upland and/or beach nourishment sites and inwater disposal at depths between 35 and 65 feet, from Columbia RM 3.0-105. The 24 sites encompass an estimated 1,454 acres.

Of the 24 sites, there are 12 upland sites encompassing 746 acres. All upland disposal sites proposed in this and the other alternatives have been used previously for dredged material disposal. Three disposal sites would be used as combined upland and beach nourishment sites. These three sites encompass 186 acres. Nine are beach nourishment sites, totaling 522 acres.

Alternative 2 – Least Cost

Alternative 2 disposal sites, with one exception, are also a subset of the sites addressed in the 1994 EA. The exception is consideration of an estimated 7.7 mcy of ocean disposal over 20 years. This alternative also considers construction of a pile dike field along Miller Sands Spit

(O-23.5) to stabilize this very erosive beach nourishment site, thus reducing material rehandling costs while still protecting the environmental values of the embayment south of the spit. Flowlane disposal at depths greater than 50 feet is proposed in this alternative.

Alternative 2 considers 17 upland and/or beach nourishment sites as compared to 24 such sites in Alternative 1. These 17 sites encompass 1,227 acres, 227 acres less than the Alternative 1. As in all alternatives, all disposal sites have been previously used for dredged material disposal. This alternative also relies on greater use of upland disposal, e.g., 16 sites at 1,076 acres versus 12 sites at 746 acres, than Alternative 1. No disposal sites that could be used for beach nourishment and/or upland disposal are proposed in this alternative versus 3 sites at 186 acres in Alternative 1. A significant reduction in use of beach nourishment disposal sites is proposed in this alternative compared to Alternative 1, e.g., one site at 151 acres versus 9 sites at 522 acres. Six sites proposed for upland disposal in Alternative 2 were not considered in Alternative 1. Inwater disposal in or adjacent to the channel would occur at a greater initial depth than that proposed in Alternative 1, e.g., 50 feet versus 35 feet, for Columbia RM 3-105.

The increase in use of upland disposal sites in Alternative 2 is intended to reduce rehandling of material that currently erodes back into the navigation channel. Similarly, the placement of dredged material in or adjacent to the navigation channel at depths in excess of 50 feet would also reduce rehandling of material. This rehandling reduction would reduce costs and environmental impacts.

Alternative 3 – Operational Plan

Alternative 3 provides for greater operational flexibility through consideration of an increased number of disposal sites than the other alternatives. This alternative proposes 28 disposal sites, encompassing 1,628 acres. Flowlane disposal would be the same as Alternative 1. Pile dikes at Miller Sands Spit and ocean disposal are also considered in this alternative.

Alternative 3 considers four additional disposal sites, an increase of 174 acres as compared to Alternative 1. This alternative also uses more upland sites and fewer beach nourishment sites than Alternative 1. For example, 20 upland sites covering 1,210 acres and 5 beach nourishment sites covering 277 acres were considered in Alternative 3 as compared to 12 sites covering 746 acres and 9 beach nourishment sites covering 522 acres. The increased use of upland sites is intended to reduce rehandling of material. The reduced emphasis on beach nourishment sites is also intended to reduce rehandling of material. Sites that could be used for beach nourishment and/or upland use are similar between Alternatives 1 and 3. Six upland sites (387 acres) and one beach nourishment site (71 acres) are proposed in Alternative 3 but not in Alternative 1. These 7 sites are all existing disposal sites and 6 of the 7 sites were used for disposal since 1985.

Alternative 4 – Proposed Plan

Alternative 4 provides for a flexible mix of dredging and disposal practices. This alternative is based substantially on Alternative 2, but it replaces disposal at O-46.8 with a pile dike field and includes some additional disposal sites for operational flexibility. While Alternative 2 was

optimized based on cost efficiencies, Alternative 4 recognizes the need for operational flexibility and considers factors such as optimal types of equipment and their availability.

This alternative considers 19 disposal sites encompassing 1,309 acres and represents 5 fewer sites and about 150 fewer acres than Alternative 1. This alternative relies mostly on the use of upland and flowlane disposal sites. Eighteen upland disposal sites (1,158 acres) are proposed in this alternative compared to 12 sites at 746 acres in Alternative 1. This alternative considers only one beach nourishment site (151 acres), the Miller Sands Spit (O-23.5) site, as compared to the 9 (522 acres) considered in Alternative 1.

Flowlane disposal would generally be in water depths of 45 to 65 feet. This represents a deeper initial depth and narrower range than the inwater disposal depths of Alternative 1. There would be several exceptions to the general flowlane criteria. Flowlane disposal would occur in areas with depths of 35 to 65 feet between Columbia RM's 64 and 68, and between Columbia RM's 90 and 101. Flowlane disposal would occur in areas over 65 feet deep in three specific areas: Columbia RM 30 to Columbia RM 33 in the Oregon half of the navigation channel; Columbia RM 54 to Columbia RM 56 in the Oregon half of the navigation channel; and Columbia RM 72.2 to Columbia RM 73.2 in the Washington half of the navigation channel.²

The bulk of maintenance dredging would most likely continue to be done by the Port of Portland pipeline dredge "Oregon" and the Government-owned hopper dredge Essayons. The Oregon has been used under a cost-reimbursable contract by the Corps of Engineers for many years and dredges over 2 mcy of sand every year from the navigation channel. The Essayons and a contract dredge removes an additional 2-2.5 mcy of sand annually on average for the operation and maintenance project.

IV. Factual Determinations (40 CFR § 230.11)

Physical Substrate Determinations

Sediments in the mainstem Columbia River typically are composed of fine to coarse sand with less than 1% in the silt to clay size classification and less than 1% volatile solids. The dredging sites within the navigation channel, access channels, and all flowlane disposal sites and sumps are located within the mainstem of the Columbia River. Flowlane disposal sites are typically located near associated dredging sites and are subject to similar hydraulic forces. The riverbed generally consists of sand waves that have minimal compaction or consolidation.

The disposal of dredged material would alter the depth and/or gradient of the flowlane disposal sites and sumps via raising the bottom elevation. The disposal location and depth of flowlane sites cannot be determined until shortly before the time of discharge due to the dynamic nature of

² The alternative analysis was taken from the 1998 Dredged Material Management Plan for maintenance dredging on the Columbia River. Although the proposed alternative states that disposal would occur in depths over 65 feet, at this time, the Corps will only dispose in depths between 35 and 65 feet. If in the future, disposal in depths over 65 feet should be needed, this action will be coordinated with State and Federal resource agencies for compliance prior to implementing such action.

the river bottom. However, rise in bottom elevation is expected to range from two to six feet depending on individual flowlane sites. This range of rise is not expected to cause significant changes in-water circulation, current pattern, water fluctuation and water temperature. The elevation rise in the disposal sites may affect the contours of the surrounding substrate; however, any such affect is expected to be insignificant. The physical characteristics of bottom sediments would not change significantly as the dredged material is essentially the same composition as material found at the discharge site.

Water Circulation, Fluctuation and Salinity Determinations

The proposed in-water disposal, including flowlane, shoreline disposal, would cause minor changes in hydrologic features such as circulation patterns, downstream flows, or normal water level fluctuations. Discharges at shoreline disposal sites are intended to offset shoreline erosion. However, the minor changes in hydraulic features are not expected to otherwise result in any significant impacts to aquatic communities, shoreline and substrate erosion and deposition rates, the deposition of suspended particulates, the rate and extent of dissolved and suspended components of the water body. Water quality characteristics such as water chemistry, clarity, color, odor, taste, dissolved gas levels, temperature, or nutrients would not be affected to any measurable degree. Based on the results of sediment analysis [see subpart (d) below], and that dredged material would originate from nearby in-water locations, physical or chemical characteristics of the receiving water would not be adversely affected.

Suspended Particulate/Turbidity Determinations

Hopper dredges discharge through doors in the bottom of the hull while under power and traveling at slow speeds, generally around 1 or 2 knots. Hopper dredges typically discharge their load in a 5-20 minute period. A hopper dredge may make 6-15 disposal cycles per day. Loaded draft depths for hopper vessels vary with their capacity but will typically fall in the 15-30 foot depth range which is essentially the range for load discharge. The hopper dredge generates a turbidity plume that is limited in extent to the area below the discharge depth and immediately along the vessel path for the 5-20 minute disposal effort. The discharged sand settles quickly to the river bottom. The sediment concentrations in the plume are limited because of the small amount of fines in the disposal material. River currents will carry the plume a short distance before it mixes with the river.

For pipeline dredges, dredged material is continuously pumped through a discharge diffuser that is located 20 feet below the water surface. The discharged sand settles rapidly to the bottom and a plume of fine grained sediments is carried away by the river currents. The downstream extent of the plume will depend on the river velocities and channel geometry at each discharge site, but it is expected to be of short duration because of the small percentage of fines.

Short-term minor increase in turbidity would occur in the mixing zones of in-water disposal sites and in-water work areas. Both states have previously issued state water quality certifications that have included approved mixing zones. With the issuance of state water quality certifications containing approved mixing zones and/or short-term modifications as appropriate, the expected increase in turbidity levels would not violate state water quality standards. Best management

practices (BMP) would be utilized for the dredge and fill actions associated with all inwater disposals.

Contaminant Determinations

All of the material proposed to be discharged pursuant to this 404(b) evaluation is dredged material from the navigation and side channels. Sediments in the mainstem Columbia River typically are composed of sand with less than 1% in the silt to clay size classification and less than 1% volatile solids. The material present in the mainstem Columbia River meets exclusionary criteria as defined under the Marine Protection, Research, and Sanctuaries Act (MPRSA) and the CWA and, therefore, would not be subject to further testing under these two environmental laws. However, this material has been subjected to both physical and chemical testing as part of this project. The mainstem sediment has been determined, in accordance with the 1998 Dredged Material Evaluation Framework (DMEF), Lower Columbia River Management Area (USEPA/COE 1998), to be suitable for unconfined in-water disposal by the USEPA, Corps, and the States of Oregon and Washington.

Material from the areas dredged in the Columbia River has been collected and analyzed since dredging first began in the early 1900s. Prior to the passage of the MPRSA and CWA physical analyses was conducted to determine dredging capability and to estimate production. After passage of these two environmental laws, analyses were expanded to include chemical and biological analyses as well as the traditional physical analyses. Physical analyses are also conducted as a regular parameter evaluated during benthic infauna studies conducted in the river. Many of these infauna studies have been conducted along the slopes and outside of the navigation channel during dredged material disposal site evaluation studies. The Corps has identified and is entering into a SEDQUAL database over 100 separate studies that have been conducted on the Columbia River by the Corps since 1980. This includes sampling of over 3,100 stations for a total of over 4,100 samples.

While the nature of the mainstem material meets the exclusion from testing as provided in the regulations and evaluation guidelines, the Corps and USEPA decided to conduct confirmatory testing for the entire project. Sixty-seven separate shoal areas were identified for sampling through assessment of the of the 1994 navigation channel bathymetry. In June of 1997, 89 surface grab samples were collected from the 67 shoals in the Columbia River project area (CRMs 3.0 to 106.2). In addition to physical analysis, 23 were further analyzed for chemical contaminants.

In accordance with the DMEF, chemical tests were performed including; inorganic total metals (9), polynuclear aromatic hydrocarbons (PAHs), total organic carbon (TOC), total volatile solids (TVS), acid volatile sulfide (AVS), pesticides and polychlorobiphenyls (PCBs), pore water tributyltin (TBT), and P450 reporter gene system (RGS), a dioxin/furan screen. Information regarding the sediment testing and results can be found in Appendix B of the Final IFR/EIS, *Columbia and Willamette River Sediment Quality Evaluation*. The dredged material was determined to be suitable for unconfined in-water disposal.

Aquatic Ecosystems and Organism Determination

Impacts to the aquatic ecosystem associated with discharge of dredged material will occur. Impacts associated with flowlane discharge of dredged material are expected to be minimal since the substrate of the main navigation channel consists primarily of sand naturally formed into sand waves by river currents. These sand waves are constantly eroding and reforming and do not provide the stable habitat needed for productive benthic communities. Sampling in the channel areas has confirmed their low productivity for benthic invertebrates. Additionally, those portions of the sand waves in the dredging prism are disturbed by annual dredging operations that typically occur from May through October for the navigation channel.

In-water disposal operations consist of flowlane disposal and three shoreline disposal sites; Miller Sands spit, site W-33.4 at Skamokawa, WA and site O-86.2 near St. Helens, Oregon. Flowlane disposal is done in or adjacent to the channel margins typically at depths from 35-65 feet. These areas are generally similar to the channel areas and are not considered very productive for benthic communities. Static benthic communities would be covered and would not likely recover because of the continuous use of the sites. However, populations of these organisms are not considered to be very high because of the dynamic nature of the flowlane habitat.

Mobile organisms present in flowlane disposal areas, such as smelt, sturgeon and crab, are adapted to the dynamic nature of the habitat arising from continuous movement of sand via river currents. They are mobile organisms and are physically capable of avoiding the disposal in most instances. Sturgeon occurs in the flow lane disposal sites as both adults and juveniles. The behavioral research by the USGS, funded by the Corps, will be used to manage the dredging and disposal operations to minimize impacts to sturgeon populations. Dungeness crabs are located primarily in the lower reaches of the estuary but can occur as far upriver as mile 10 when river flow is low and up river salinity is high. Crabs could be present at the flowlane site at RM 5. Studies have shown that crabs are able to dig out of disposal materials, although some individual crab do not dig out and are smothered. The number of crabs impacted will depend upon how many are in the disposal site, which is dependent upon river and tide conditions.

Studies have shown that smelt spawning is not successful in the high-energy areas like those used for flowlane disposal. Larval smelt move up into the water column after hatching; consequently, it is likely that smelt larvae would not be affected by aquatic disposal operations. Based on the above, it is likely that smelt populations would not be affected by flowlane disposal.

Shoreline disposal sites are located in areas that are highly erosive and do not provide much, if any, habitat for benthic communities. Consequently, use of these sites is not expected to have a significant impact on the benthic productivity of the area. Only three shoreline disposal sites (Sand Island and Miller Sands Spit, Oregon and Skamokawa, Washington) are proposed for disposal operations.

Proposed Disposal Site Determinations

In-water disposal and flowlane disposal may be conducted by either hopper or pipeline dredges. The real extent of the mixing zone for in-water disposal is influenced by river conditions, material type, and dredge equipment.

Flowlane disposal sites are located in or adjacent to the Columbia River federal navigation channel from RM 3 to RM 106, at depths generally from 35 to 65 feet, but typically over 45 feet. The actual disposal sites cannot be designated beyond the general description in the first sentence of this section. They vary from year to year depending on the condition of the channel. Harrington Sump is located between the navigation channel and Rice Island from CRM20 to 22. River currents are influenced by upstream discharges and ocean tides and typically vary from -1 fps to +3 fps. The Columbia River is generally not stratified except in the estuary where salinity intrusion causes stratification. The stratification is not expected to significantly influence mixing of the disposal plume.

The substrates at the flowlane and sump locations are predominately medium grain sand with some fine and coarse grain sand with less than 1 percent silt or clay. Columbia River suspended sediment concentrations vary seasonally, but are generally between 10-20 mg/l during the dredging season.

Hopper dredges discharge through doors in the bottom of the hull while under power and traveling at slow speeds, generally around 1 or 2 knots. Hopper dredges typically discharge their load in a 5-20 minute period. A hopper dredge may make 6-15 disposal cycles per day. Loaded draft depths for hopper vessels vary with their capacity but will typically fall in the 15-30 foot depth range which is essentially the range for load discharge. The hopper dredges generates a turbidity plume that is limited in extent to the area below the discharge depth and immediately along the vessel path for the 5-20 minute disposal effort. The discharged sand settles quickly to the river bottom. The sediment concentrations in the plume are limited because of the small amount of fines in the disposal material. River currents will carry the plume a short distance before it mixes with the river.

For pipeline dredges, dredged material is continuously pumped through a discharge diffuser that is located 20 feet below the water surface. The discharged sand settles rapidly to the bottom and a plume of fine grained sediments is carried away by the river currents. The downstream extent of the plume will depend on the river velocities and channel geometry at each discharge site.

For flowlane and sump disposal the river current would carry away fine sediment but since the disposal material would be mostly sand, the extent and duration of the plume would be minor. No mud flats and vegetated shallows would be affected by disposal in these areas as it occurs in and adjacent to the navigation channel which is generally distant from these habitat types. The material would not introduce toxic substances (see above discussion of contaminant determinations) into the surrounding waters.

Shoreline disposal can generate elevated suspended sediment concentrations near the shoreline at the three shoreline disposal sites. The suspended sediment concentrations decrease rapidly as the disposal water mixes with the river discharges.

Potential Effects on Human Use Characteristics

Municipal and Private Water Supplies: There are no municipal or private water supply intakes in the vicinity of the disposal areas.

Recreational and Commercial Fisheries: As indicated by the evaluation of contaminants above, the commercial and recreational fisheries are not anticipated to be impacted by contaminants. Disposal operations are not expected to disrupt migration and spawning areas. Dredging impacts to crab, including flowlane discharge of dredged material, are anticipated to impact a small fraction of the crab population in the estuary. The crab population in the estuary is only part of the total crab population in the area. Therefore, the project is not anticipated to adversely affect the crab fishery.

Water-related recreation: Water related recreation in the project area consist of: pleasure craft, jet skies, water skiing, wind surfing, canoeing, and kayaking. Impact to water related recreation is expected to be minor in areas where disposal will occur. Dredges will be operating in localized areas within the project area for short periods of time. Although there may be some disturbances to individual recreators, these disturbances will be minimal.

Aesthetics: No impacts to aesthetics are anticipated.

Parks, etc: There are two public beaches that are also shoreline disposal locations. While material is being disposed of at this location, there will be minor disturbances to shoreline use by individuals using the beach. The periodic placement of material at these locations enables continued public use of these areas. There are no national and historical monuments, national seashores, wilderness areas, and research sites within the discharge areas.

Determination of Cumulative Effects on the Aquatic Ecosystem

The proposed discharge of dredged material is not expected to have any significant adverse cumulative effects on the aquatic ecosystem.

Other discharges of dredged material associated with the project are not predicted to have significant adverse effects either alone or in combination with other existing or reasonably predicted discharges of dredged or fill material. The cumulative effects of other ongoing and currently authorized activities involving discharges of dredged or fill material (e.g., existing filling and diking, ongoing maintenance dredging, maintenance of the mouth of the Columbia River, operation of the Federal Columbia River power system, and existing development along the Columbia River) are reflected in the current conditions described in the Final Supplemental Integrated Feasibility Report/Environmental Impact Statement for the Columbia River Channel Improvement Project.

While not caused by or connected to the maintenance project, some future development of port, marine, and industrial facilities is reasonably foreseeable within the project area. Similarly,

continued urban and industrial development in the project area is reasonably foreseeable in response to regional and national economic trends.

Future urban, industrial and port development as it is implemented, would likely include some discharge of dredged or fill material which would in turn result in localized impacts to aquatic ecosystems (e.g., wetlands, riparian and shallow water habitat, and water quality). The NOAA Fisheries and USFWS May 2002 Biological Opinions for the Channel Improvement project, discuss such potential development and its potential impacts (e.g. increased localized demand for electricity, water and buildable land with indirect effects to water quality; and, the increased need for transportation, communication and other infrastructure;) on listed species, as well as state, local, tribal and private actions to benefit listed species.

Given the large geographic area involved and the uncertainties associated with state, local, tribal and private actions, the precise nature and timing of future development, and its environmental impact, are extremely difficult to predict. However, given the minimal adverse effects to aquatic ecosystems (if any) anticipated for the discharge of dredged materials associated with the maintenance project, the discharges under the proposed project are not anticipated to contribute significantly to any adverse cumulative effects resulting from unrelated development projects. Further, all significant future development, including future discharge of dredged or fill material, will likely be subject to additional independent environmental reviews by state and federal agencies under the NEPA, CWA, ESA, and similar state programs.

Cleanup of the lower Willamette River under the federal Superfund program is also reasonably foreseeable and may directly affect the Columbia River and its aquatic ecosystem. At this time, the remedial investigation and feasibility study have not yet been completed and a cleanup plan has not been selected. Therefore, it is not possible at this time to determine the nature or magnitude of any short-term or long-term impacts of the cleanup action on the aquatic ecosystem or whether such impacts would be cumulative to any impacts (positive or negative) of this project.

Determination of Secondary Effects on the Aquatic Ecosystem

The proposed action would not result in fluctuating river levels. Surface runoff from disposal sites would be negligible as precipitation is expected to readily percolate into the sand. The rehandling (sale) of sand from upland disposal and shoreline disposal sites would not affect the aquatic ecosystem as the activity would occur behind containment dikes and/or above the high tide line. No other secondary effects resulting from the discharge of dredge material are anticipated.

V. Findings of Compliance (40 CFR § 230.12)

- a. No significant adaptations of the guidelines were made relative to this evaluation.
- b. Alternatives: Alternatives to the proposed action were considered, including the no-action alternative. Upland disposal of all Columbia River dredged material is not practicable from a physical or economic standpoint and would affect substantially more wetlands and

wildlife habitat if it were implemented. All alternative disposal actions have been evaluated for engineering and environmental suitability using an array of screening criteria. Avoidance of wetlands, critical (ESA) riparian habitat and habitat important to threatened and endangered species are among the screening criteria considered in the analysis.

c. Water Quality Standards [40 CFR § 230.10(b)(1)]. The project complies with state water quality standards. The Corps has applied to the States of Oregon and Washington for water quality certifications under Section 401 of the Clean Water Act for all discharges of dredged material into waters of the United States associated with the project. Issuance of these certifications will reflect the states' reasonable assurance of compliance with state water quality standards.

d. Toxic Effluent Standards [40 CFR § 230.10(b)(2)]. The USEPA has designed 65 substances and compounds as toxic pollutants under section 307 (see 40 CFR § 401.15), but it has adopted effluent standards under this subsection only for manufacturers and formulators of aldrin, dieldrin, DDT, DDD, DDE, endrin, toxaphene, benzidene, and polychlorinated biphenyls (PCBs; see 40 CFR part 129). The disposal of dredged material associated with this project would not violate toxic effluent standards of Section 307 of the CWA.

e. Endangered Species [40 CFR § 230.10(b)(3)]. The Corps has consulted with both the US Fish and Wildlife Service (USFWS) and NOAA Fisheries (NOAA) regarding potential impacts of the proposed work to threatened and endangered species. In a letter dated Dec. 14, 2004, the USFWS concurred with the Corps conclusion provided in a Biological Assessment (BA) dated Nov. 8, 2004, that the proposed project is not likely to adversely affect listed species under their jurisdiction. The Corps also provided a BA to NOAA, in September 2004, which concluded that the proposed action is likely to adversely affect the listed species under their jurisdiction. NOAA is preparing a Biological Opinion on the project that is due in February 2005.

f. Marine Sanctuaries [40 CFR § 230.10(b)(4)]. No marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972 will be affected by the proposed action.

g. No Significant Degradation [40 CFR § 230.10(c)].

(1) The proposed action would not result in significant adverse effects on human health or welfare, including municipal water supplies, plankton, fish, shellfish, or wildlife.

(2) Significant adverse effects on life stages of aquatic life and other wildlife dependent on the aquatic ecosystem, on ecosystem diversity, productivity, or stability, or on recreational, esthetic, or economic values would not occur.

(3) No significant adverse effects on aquatic ecosystem diversity, productivity and stability are expected due to avoidance, impact minimization, and implementation of best management practices, and monitoring actions, to assess project-related impacts throughout the project life.

(4) No significant adverse effects of the dredged material are expected on recreational, aesthetic and economic values.

h. Minimization of Impacts [40 CFR § 230.10(d)]. Initial efforts focused on avoiding or minimizing impacts to the extent practicable during selection of disposal sites. Avoidance was accomplished by focusing disposal at existing and previously used disposal sites. Additional appropriate steps to minimize potential adverse impacts, in accordance with the BMP's would be specified in the dredging contracts for dredging orders for O&M dredging actions. With the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem, the proposed discharge is specified as complying with the requirements of Section 404(b)(1) guidelines.

VI. Conclusions

On the basis of the factual determinations and findings made above, the proposed discharge of dredged materials comply with the Guidelines at 40 CFR Part 230 and with the requirements of Executive Order 11,990 (Protection of Wetlands) and based on the factual determinations and findings made above that the proposed fill material associated with this project is in the overall public interest.